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MALCOLM W. FORD

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174 BROADWAY, NEW YORK, U.S.A.

VOLUME IV

NUMBER 2



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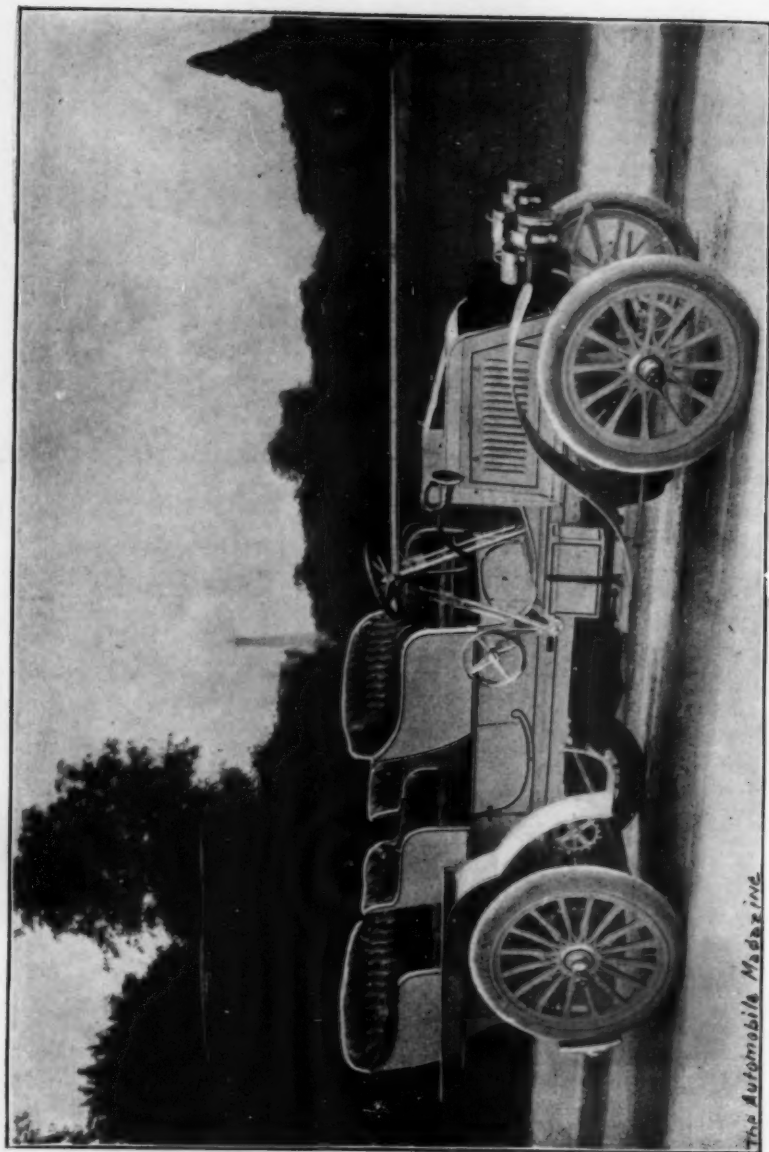
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Baron de Zuylen's Large Touring Car

The Automobile Magazine

THE AUTOMOBILE MAGAZINE

VOL. IV

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The Paris Automobile Show

By ALEX SCHWALBACH

THE fashionable world has generally gone to Paris for its styles. Society having taken up automobiling as its latest fad, naturally turns to Paris for the latest developments in automobile construction. And with good reason too, for there the industry and the sport, encouraged by the government, patronized by the nobility and society, aided by the clever ingenuity of the French artificer, mechanic and chauffeur, and ideal road conditions, are firmly established and have set the fashion to the world at large. Indeed the attitude of the British maker has been well described as "sitting on Panhard's doorstep," a good place also for the American maker. Not that it is always well for us to copy the designs of the great French makers as a whole, or in detail, but only in a general way and adapt them to our uses and conditions.

Germany, the birthplace of Otto and Daimler, is really the parent-ground of the gasoline motor and automobiling. Otto invented the heavy stationary gas engine with its gas jet for ignition, and Daimler after ten years of service with Otto invented the hot tube ignition which permitted the speed to be increased eight to ten times over the older form of motor, besides reducing the weight in nearly the same degree, and at once Daimler realized that the application of it made a self-propelled vehicle on the road a practical thing and then the gasoline automobile was born. He established works at Cannstadt,

near Stuttgart, the home of his youth, and devoted himself to the designing and building of light gasoline motors and motor vehicles.

In 1885 he produced his first motor vehicle, a motor bicycle, which was the first gasoline motor automobile ever made for practical use. It is also interesting to note here that in the elementary principles and fundamental ideas the motor of Daimler and the motor of to-day are one and the same, excepting in a few minor changes in detail ; the most important of these being the substitution of multiple cylinders, the vertical cylinder being his original idea, and the electric



M. le Baron De Zuylen, President
A. C. of France

spark for ignition purposes instead of the hot tube, the latter while rarely used in this country being still used by many foreign makers. Daimler's idea of reducing the size and weight of the motor and running it at a high speed so as to make the slow, heavy motor of Otto a small, light, rapid motor, solved the problem—and the result is the gasoline motor of to-day.

All of this was not lost upon the cunning Frenchman and shortly afterwards

M. Levassor, using a motor of Herr Daimler's, persisted in trying to build a motor vehicle that would carry him once around the forts surrounding Paris without breaking down, and after nearly two years of constant effort accomplished this, then, great feat. It was M. Levassor who suggested putting the motor in front of the dash and the distribution of the other mechanical parts of the vehicle which must follow this practice and which led him and the others to final and great success.

M. Levassor's little trip around Paris has, as all the world knows, developed so that the trip is now made from Paris to Bordeaux without a single stop, except for fuel. Meanwhile other French mechanics were not idle. The Comte de Dion, young, idle, wealthy and socially prominent, while looking for a toy for a gift, saw a small motor in a Parisian toy house ; he was delighted with it, bought it and took it

home, returning to the toy shop a few days later to find out who made it, was given M. Bouton's name and address and the acquaintance thus formed led to the formation of the great firm of De Dion-Bouton, an association that has been paramount in making the automobile a social, mechanical and commercial success in France. The French people are great on shows and in 1894 the first automobile show was held almost secretly in Paris in the Salle Wogram, and called a Salon du Cycle—only a few brave spirits who were interested attending it. The next year it was held in the Palais d'Industrie and great progress was shown. The year following it went back to the Salle Wogram and the Palais du Sport, so that they had two shows instead of one, owing to an unfortunate split among the Cycle Makers' Circle. Notwithstanding all these moves and changes the shows kept on growing in size and increasing in popularity and influence. During all this time, however, the new motor vehicle industry had grown tremendously and held a show of its own at the Tuilleries Garden, which was a record-breaker.

In 1900, the World's Exposition year, the cycle and motor shows were joined and the result proved advantageous to both.

At present the Salon du Cycle et de l'Automobile is an annual affair, a December fixture, and is held in the Grand Palais, a building devoted to artistic and industrial exhibitions. The 1901 show, which revealed the products for the coming year, closed on Christmas day and was officially opened on December 10, by President Loubet, accompanied by his ministers and officials and in the presence of 41,324 persons who had passed the gates. On the first Sunday the show was opened, 27,236 people passed the turnstiles of which about 25,000 paid an admission fee. The daily week-day attendance averaged about 11,000 people. The final scene was the drawing of tickets for the free lottery for which the chief prizes were two automobiles. The estimated profits are about 100,000 francs which will be divided equally between the exhibitors and the Automobile Club.



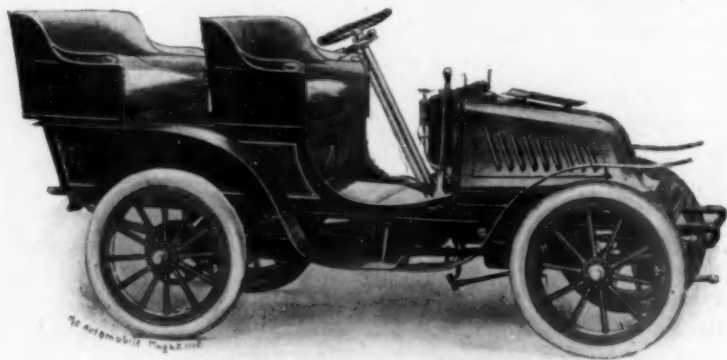
M. le Marquis De Dion, Vice-President, A. C. of France

The show differed from ours in being open on Sundays, closing every day at 6.30 p. m., the joint exhibition of cycles, autos and flying machines, the richness of the decorations of the stands and signs, and last but not least the beauty, light, ventilation, and the cleanliness of the building. The aerostat and keel suspended from the roof of the great nave was built for the Henry Deutsch Navigable Balloon by the Mors Company. Indeed the privilege of being able for the first time to inspect a show of flying machines and balloon appliances, a most interesting collection at that, the electric keel of the famous navigable balloon "La France" being one of the main features, was alone worth the nominal price of admission. The total number of exhibits was greater than of any other previous show, there being 110 exhibitors, of which 7 were electric, 3 steam, and 100 gasoline vehicles, valued at over 5 million francs, and the demands for space were so great that most of the exhibitors had to take less space than they asked for, a point which emphasizes the great growth of the industry there, during the past year. Large numbers of new firms have entered the field with every prospect of success, now that the evolutionary period of the industry has passed, practical systems of tried value being in vogue, and the risks of originality are diminished by following along the lines of accepted good practice.

American interest in the Paris show has been stimulated by the glowing reports brought back from France by returning tourists and the number of French automobiles that have been brought into this country during the past year, this last statement being evidenced by the preponderance of French motor vehicles in the loan exhibit of the New York Show of November last, only one German vehicle, the "Daimler," and one English vehicle, the "Napier," having been shown with them. It was obvious even to the most superficial observer at the New York Show that the new French designs were to be largely copied by many of our American makers, not but that we had always copied from them, but unfortunately, as an infant industry in swaddling clothes, had not kept pace with the most advanced French ideas and makers who apparently have had their seven league boots on all the time and thus kept in advance of us continually. Brief and scattered cablegrams from Paris concerning the show have been published heretofore, but since its close the foreign mail has brought copies of the French, German, and English automobile journals from which the illustrations and reports of the show have been taken and are here presented.

Among the large number of vehicles shown the prevailing tendency was to follow the leading features of the Panhard and Daimler practice, and in the light models the Darracq and Renault forms were those which were standard patterns. Not wholly in exact copies but only in the general design and main points was the similarity noted, the variation in detail, however, being considerable.

The voiturette and the light carriage types are still embryonic and in evolution and the quadricycle has almost been superseded by the small voiturette, the motor bicycle having usurped the popularity formerly enjoyed by the tricycle, only a few of the latter having been shown. The motor bicycles, it was said, excepting those already



Darracq 1902 model

well known in England and one or two new ones of merit, were not considered as promising as those recently shown in London and they were therefore disappointing.

No attempt has been made to present here a stand-to-stand report of the show, the idea being to describe only the new things and the mechanical tendencies developed.

ELECTRIC AND ELECTRIC-GASOLINE CARRIAGES.

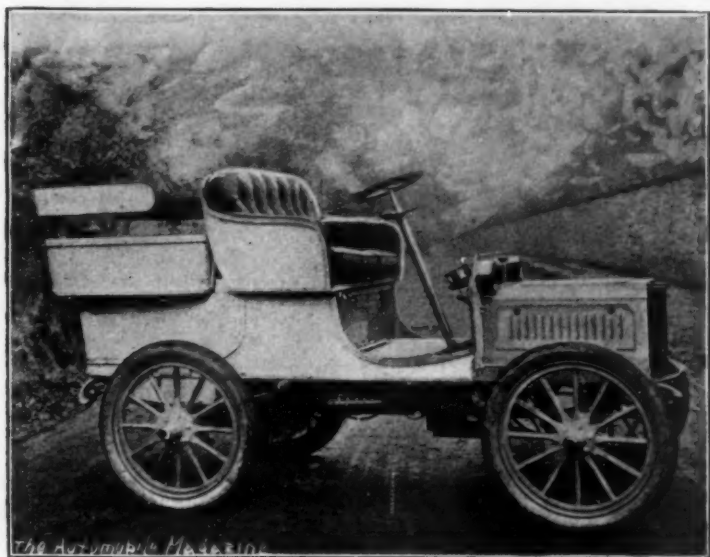
Two well-known American electric carriages were the Riker and Columbia. The Mildé, a leading French make, was also there. De Dion-Bouton showed a couple of electric vehicles, using batteries and motors of their own make. They also exhibited drum type motors in aluminum cases. A little three-wheel voiturette was shown in

which an electric motor was placed over the front wheel, the speed being first reduced by pinions and then carried by a belt to a pulley on the hub. The batteries were carried in the body under the seats. Two interesting electric-gasoline combination carriages were shown, one being the famous Jenatzy. It was fitted with an old-pattern Mors gasoline motor with the dynamo on the crankshaft, the dynamo acting as a fly-wheel while it sends current into the battery or runs as a motor when extra power is needed. The gasoline motor is started electrically and the whole vehicle can be run electrically if need be. The carriage was rather heavy, weighing 1,250 kilos (about 2,700 pounds), inclusive of 340 kilos of batteries, but it will be made lighter. Some question has arisen as to the gain, if any, that is made by making electricity on a moving vehicle by a gasoline motor. It would seem that in this combination of gasoline motor, dynamo and batteries all the ills the automobile is heir to were to be found. Possibly some of these ills are not real, and if they were this system may overcome them. It certainly has these advantages: A motor of 50 per cent. less power and weight, its ability to climb grades by the use of the allied powers, small consumption of gasoline, no transmission gear, low cost of maintaining the batteries which are always working under favorable conditions and are never exhausted, because on down grades the dynamo begins to recharge the batteries, and on levels the excess current is shunted into the batteries. An American type of this carriage called the Fischer is now being experimented with and may be shown at the Chicago show.

The other combination vehicle was a gasoline-electric car shown by M. C. de Champrobert. This carriage differs from all other "mixed" vehicles because it has no batteries. Electricity is generated by a gasoline motor driving a dynamo and used in an electric motor on the rear axle. The vehicle only weighed 550 kilos, which is less than most light carriages that are propelled by internal combustion motors of 8 H. P., the force employed in this car. On the crankshaft is a dynamo which serves as a fly-wheel at the same time that it generates current. This current passes direct to a series motor, which is geared by pinions on to the rear axle. An electric regulator acts on the induction of the gasoline motor, so that when the dynamo begins to generate more than is needed the admission of gas is automatically throttled. It is claimed that 75 per cent. of the power developed by the gasoline motor is utilized on the rear axle, which efficiency is greater than is possible with mechanical transmission.

A NEW FORE-CARRIAGE

An attachable fore-carriage has long been needed, but a really practical one has not yet appeared to fill the demand, although a great many inventors here and abroad have tried to devise one that could be readily fitted to an ordinary carriage and convert it into an automobile. A good one exhibited had, of course, the whole of the mechanism carried on the front axle and consisted of a 10 H. P. motor with two cylinders in the same axis, the pistons working on one crankshaft. Power was transmitted by a shaft and bevel-gears to



Ceainprobert Petrol and Electric Car

the counter-shaft behind the axle. At the ends of the counter-shaft are the pinions on the driving-wheels. The changes in speed are effected by the magnetic system, similar to that which was experimented with by Panhard and other firms two or three years ago. This plan enables the makers to do away with the balance-gear, since the two end pinions are normally fixed magnetically, but on turning the steering-wheel one of the pinions is automatically unlocked and turns free on the shaft. The working of the fore-carriage, therefore depends entirely on the current supplied by a small battery, and it is

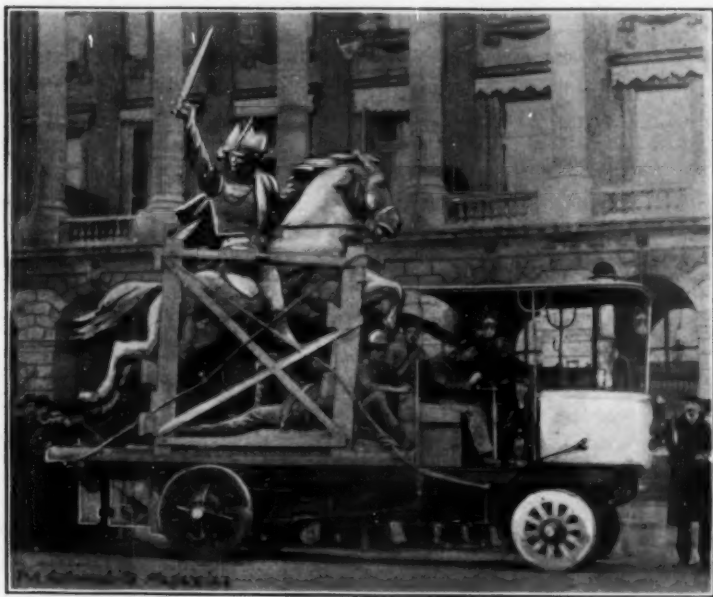
doubtful whether this system will prove more successful in this light mechanism than it did in the big carriages. The gasoline and water tanks are carried behind the axle to balance the weight of the motor in front. In fitting this arrangement nothing has to be done to the carriage beyond making a hole in the footboard for the passage of the steering-pillar. The *avant-train* is bolted underneath, and pivots on tension-tubes connecting with the rear axle.

STEAM CARRIAGES

"Mit Dampf" is evidently not the popular thing in France as it is with us, only two French carriages being steamers—"the Serpollet" of last year without change, and M. Chaboche's new steam carriage, which differs largely from accepted American practice. The boiler, a semi-flash style, is composed of spirals of tubes, heated by three kerosene burners, and is placed either in front or rear. The two-cylinder double-acting engine, slightly inclined out of the horizontal, is situated under the fore-part of the vehicle, and the crankshaft turns in a box, which also contains the gear for two changes of speed. The transmission to the rear axle is by a shaft. The generation of steam, according to the resistance to be overcome, is practically automatic, as is also the lubrication, so that once the vehicle is ready for starting, no further attention need be given to it. A large surface-condenser of small volume is placed under the fore-part of the carriage, and it is claimed that one supply of water and kerosene will run the vehicle 62 miles. It looks more like an up-to-date gasoline vehicle than a steam wagon.

On a large steam lorry, built by Dion and Bouton, was shown Bartholdi's great statue of Vercingetorix, destined to ornament one of the squares of Clermont-Ferrand, but first exhibited under the Central Dome of the Grand Palais. On Tuesday, December 3, the huge motor-car conveyed the work to the Grand Palais, and after the closing of the show it will carry its precious burden to the chief town of the Puy de Dome. The journey there will occupy some five or six days, and the average speed will be from ten to twelve miles an hour. Our illustration shows the statue at the moment when it left the foundry. Round it are grouped the chief workmen who cooperated in the casting, and in the very center the eminent sculptor, M. Bartholdi. The drivers are those who will convey the statue to its final destination. The work represents Vercingetorix waving his sword, reining in his charger, and cheering his warriors to attack the

Roman legions. The model has already been in existence for thirty years, and the subject has been made famous by pictures. It has even appeared on the label of a certain mineral water, to the proprietors of which it was granted as a trade-mark. This concession was made by the committee in order to augment the subscription for the erection of M. Bartholdi's work on the scale originally projected. The statue was intended at first to be set up on the Plain of Gergovia, near Clermont, which was the scene of the last effort of Vercingetorix



Bartholdi's Vercingetorix

against the Roman invader. Considerable regret has been felt that the statue could not be cast in the colossal proportions of the first design, as it would then have been a superb pendant to M. Bartholdi's "Lion of Belfort." But even in the state in which it has been finally cast the work is imposing.

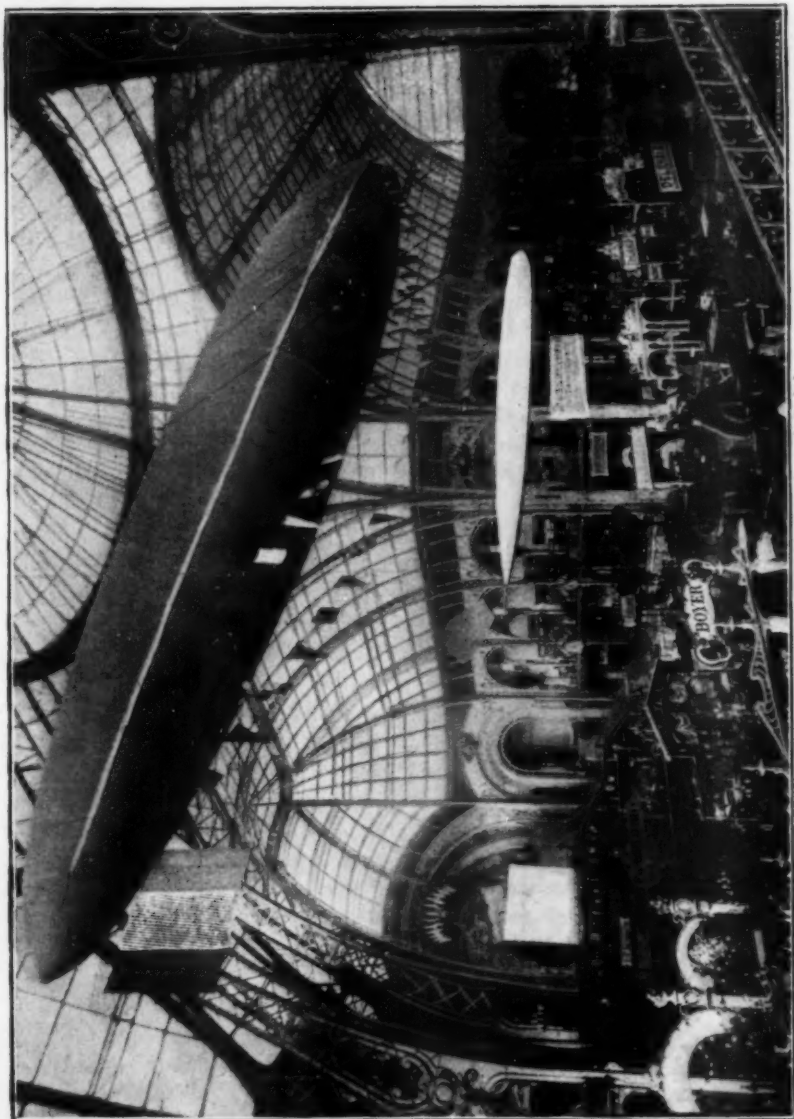
TRANSMISSION GEARS

Nearly all the French cars imported into this country have the double chain drive, *i.e.*, one chain driving on each rear wheel from a counter-shaft carrying the differential gear, this shaft being in turn

driven by a bevel or spur gear connection to the main shaft, and change speed gears—the rear axle being rigid. It was therefore supposed that this method would be in universal use at the show, but it was not. The flexible shaft carrying gears to a live rear axle with a differential gear, the wheels being made fast to the ends of this axle on the American style, being more largely shown. Both methods have their objections, the stress of the chain pull increases enormously as the load of resistance increases and the tendency is to yield in the direction of least resistance as is obvious. From this tendency to draw the shaft and axle toward each other, the bevel gear is altogether free, but the gears must be placed in the frame with perfect exactness, and kept so—the flexible shaft being intended to keep it from getting out of line. The bevel gear is well-known to be a waster of power by friction. There is also the problem of end thrust to be considered, and the tendency of the gears and pinions to roll away from each other, and the side thrust produced thereby, besides the difficulty of keeping them lubricated and their clatter and noise. Summing it all up, it seems as if a combination of the two methods would produce the best results. The American idea of a single chain-drive in the center with the necessarily weak divided axle, not being as good practice as the French method of driving from a strong differential geared counter-shaft with a chain on each end running to and fro on a sprocket on each rear wheel mounted on a stiff, rigid, solid axle, which will carry the load and resist the driving pull of the chain.

No great advances were shown in transmission gears and the industry is still plagued with this problem. As usual nothing succeeds like success, and the use of shaft transmission on a few well known and popular make has of course induced a large following, so that the shaft with the train balladeur—another typical word like *tonneau*, added to the etymology of the industry—is the most popular form. Fixed and sliding trains of spur gears, owing to their simplicity, low cost, and ease of production, have almost superseded the method of keying the loose wheels in mesh. It is not to be inferred from this that the train balladeur is perfect, only that it is more practical in use than gears composed of many parts, which are apt to be complicated. The belt still bobs up serenely, but only where it can be run under high speed, and some forms of expanding pulleys are gaining in favor.

The Fouillaron cars showed a system of transmission by expanding pulleys, which consist of two steel cones built up with



Interior of the Salon of the Grand Palais

triangular section arms or spokes to slide into each other. The belt is made of triangular pieces of hard chrome leather, through which pass a number of large cat-gut cords, and while fitting into the groove of the pulley the rigid leather sections offer considerable resistance to the steel sections forming the cones. Under the steering wheel is another hand wheel operating a spindle which, by a screw movement, displaces a lever hinged at the ends to one of each pair of cones. While therefore one cone is being drawn away, the other is pushed forward, and while the diameter of the pulley on the motor-shaft may be increased that on the counter-shaft will be diminished. When the cones are close together a large diameter results, and as they are separated the diameter of the V driving gear increases. Every possible change of speed can be made without sound.

There was an expanding pulley idea called the Cheminette, consisting of steel strips hinged at the center and the circumference, and thus expanded and contracted for variation of speed. Brouhot et Cie. showed a car without a differential gear but having ratchet clutches inside the hubs of the driving wheels. In taking corners the outside wheel runs free, and on dropping down again to the same speed as the inside wheel the rocking pawl falls into the teeth for forward driving. The De Dietrich Car had a long crossed belt from the crank shaft to the change speed gear, which is not new, the German Benz Car having long used it, and American makers having abandoned it long ago.

Steering pillar driving as developed by L. Mégy, whose patent spur wheel gear is in general use in foreign engineering shops, was for the first time shown on an automobile. The car is driven entirely by different movements of the steering spindle. When in a vertical position, the motor is out of gear. To put the engine in gear the pillar is brought back to a position for steering, and is then pushed down, when levers at the end of the pillar force in the clutch. An upward movement throws the motor out of gear, and puts on brakes, and a further movement upwards reverses the vehicle. The pillar can be fixed in any of these positions by means of a small lever underneath the wheel. There is no change speed lever, as the speed is varied automatically according to the resistance the carriage has to overcome. The spur wheel for three speeds and reversing are always in mesh, and on each of the loose wheels is a large collar or drum, inside of which is a leather disc. These discs are operated by a rod inside the shaft, and are displaced by the resistance met with by the

vehicle, so that when the car begins to slow down on one speed the rod moves forward and presses the leather disc on a lower speed wheel, and when the resistance diminishes, it moves back automatically to the higher speed, the motor meanwhile running all the time at the same rate. Any one speed, however, can be fixed by a small lever on the dashboard. The car thus regulates the speed according to the character of the roads and the gradient without any attention on the part of the driver, the passing from one gear to another being caused simply by the varying resistances.

RUNNING GEARS AND BODIES

In under-frame or running-gear construction, "armoured wood" frames are popular for light carriages instead of channel or angle-steel frames, which were in vogue paradoxically on either the very lightest or the very heavy types of vehicles. Tubular frames, which were always very popular in France, are again in greater vogue, the tubes being of much larger diameter and stiffened with longitudinal stays on the principle used in single span bridge construction.

Lengths and widths have, however, been greatly increased, the average being 8 feet 2 inches in length and 6 feet 6 inches in width.

Unusually large cars were scarce, not more than half a dozen by actual count being shown. It is true that there were plenty of heavy appearing vehicles in the show, but even these were labeled "light cars," notwithstanding their weight and power, this first impression of massiveness in the light carriages, doubtless arising from the great changes made in this popular type of carriage. The increased length and width of the under-frame permitted the adoption of the tonneau body to it, thus making the light carriage more roomy and comfortable and giving it the effect of the larger vehicle, without its great cost, weight and expense of maintenance. The tonneau body has been improved by flaring out the sides, bulging out the corners to overhang the frame, and making the seating capacity in the rear longer. While it was tonneau here and tonneau there and tonneau everywhere, there are a few objections to it and a new style of double phaeton was shown which when boxed in at the back, or covered with an awning or top becomes a limousine and nearly all the leading makers showed them. A year ago the tendency towards light car construction was noted; it is now general, and the popular type is the light car with vertical cylinders, the motors running at low speeds, mostly at 800 revolutions, a few exceeding 1200 revolutions per minute, with horse-powers of 8 and 10 and sometimes 15.

From the point of view from this side of the Atlantic, it seems strange that in their efforts to popularize the light or rather small voiturette the French have not adopted American runabout and phaeton bodies, these two styles lending themselves most readily to this form of light construction and meeting the demand for a popular priced wagon.

NOVELTIES IN CONSTRUCTION

M. Prosper Lambert showed a carriage with a De Dion - Bouton motor having the differential gear and transmission shaft running on ball-bearings, a system which must eventually be adopted by all the makers, on account of its cleanliness, economy in use of oil, and great saving in power.

The Bardon and the Gobron-Brillié cars were really the only ones that could be run with pure alcohol, but nothing in the show indicated that alcohol could be used more economically than gasoline.

De Dion-Bouton showed a railway inspection car propelled by a gasoline motor.

De Dietrich exhibited a light delivery wagon which could be converted into a tonneau body in a few minutes, an idea which will be popular if it ever reaches here, for then our corner grocery man can use it all the week for business and go down the road on Sunday with his family.

On the new Charron the driving-axle was jointed at each end and near the bearings by a double knuckle joint so as to give great flexibility in every direction.

Rochet and Schneider use ball-bearings with retainers. This firm rightly believes that ball-bearings are better than plain bearings, and they base this opinion upon the experience gained on the trials and hill-climbing tests held during the year.

TIRES

In the tire department were shown some new devices for preventing punctures and side slip. A tire had a tread made of a broad and flat projection, on which were fixed narrow metallic strips, the ends of which were turned down over the thickened tread, and fastened by pins. Other pieces of metal bent to a rather sharp angle, were fixed to the thickened edge, so that they interposed between the rim and tire to prevent rim cutting.

The "Croissant Armé" is also new and consists of a number of fine wires set closely together, and covering the whole of the outer

cover. The wires have a wavy form so as to give to the compression of the tire. The ends of the wire project on the tread just enough to give a rough feeling to the touch and while the device will hold the tire on a slippery road, the close setting of the wires will prevent the air chamber from being punctured. Another device shown consisted in making the air chamber double, the inner one being of much larger diameter, thus fitting in irregular folds against the outer air tube when inflated. When the tire is punctured the loose inner tube gives way, or even should it be punctured in its turn the holes do not correspond, with the result that when the puncturing instrument is withdrawn and the loose tube is forced against the outer one by the air pressure, the puncture is closed. Another device resembling the American Metallic Tread Tire has a leather belt on the tread fastened by copper pins and studded all over with brass nails.

The well-known Michelin, Continental, Dunlap, and Clincher detachable tires were of course popular, the single tube tire was rarely seen; the wooden spoked artillery wheel was also the correct thing, the tangent wire-spoked suspension wheel being rare.

MOTORS, CARBURETERS AND IGNITION

The heavy vertical motors running at a comparatively low speed, ranging from 750 to 1,000 revolutions and seldom exceeding 1,200 revolutions per minute, seem to have influenced the use of many single cylindered motors of from 7 to 12 H. P. running at about the same speeds, and caused a reaction against the use of motors running at 2,000 revolutions per minute. It was inferred by many critics and reviewers of the New York Show that single-cylindered motors were altogether out of favor in France. The Paris show did not sustain this inference, for among the single-cylindered makers were found such well-known names as De Dion-Bouton 8-12 H. P., Gillet Forest et Cie, M. M. Amadie and Leon Bollée 9 H. P., 1,000 revolutions, weighing 130 kilos, Lepape 12 H. P., Clements 7 H. P., 1,200 revolutions, and Delahaye 7 H. P., with many others not as well known. Two forms of double horizontal motors, the Crouan and Supra-moteur were shown, but were placed transversely in front of the body, not longitudinally as on our Winton and Haynes-Apperson. The vertical motors of either 2 or 4 cylinders are the most popular and their economy and durability more than offset their slightly increased weight. All of them are not heavy, the Bouchet 40 H. P., 4 cylinder motor, weighing only 160 kilos (330 pounds) or 8 pounds per H. P.; and owing to their lightness two of these motors are being made for

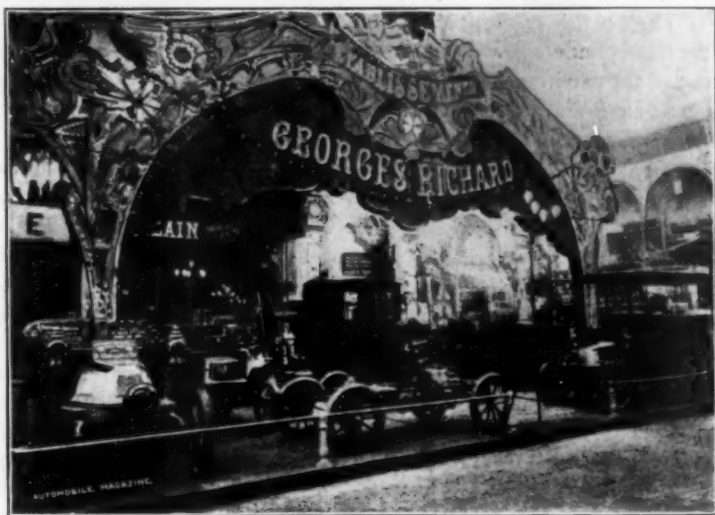
M. Santos Dumont's new air ship. Peugeot showed a 15 H. P. vertical motor running at 900 revolutions, and Decauville one of 20 H. P. The largest one in the show was the 60 H. P. Mors built for the Hon. C. S. Rolls, a leading British motorist. A motor of the same make and size was also exhibited, being built to propel the Henry Deutsch navigable balloon. Panhard showed two new types of 10 and 15 H. P. motors, and Mors two of 8 and 12 H. P., both makes being fitted to light carriages of the modified heavy car styles which are so well known. In the double vertical cylinder motors the tendency was to run them at low speeds (750 and 1000 revolutions) and, what was more remarkable, low forces of from 6 to 8 H. P. The Richard was $7\frac{1}{2}$, Schaudel 6, Baille-Lemaire 8, Rochet et Schneider 8, Abeille 10, and Hidier 8 H. P. These were all fitted to light carriages but the limit of power for this class has not yet been reached. The motors have been improved by casting the cylinder and head in one piece, the use of external valves to permit removal for inspection, making the valves larger, operating the pump from the main shaft by gear, regulating the admission and not the exhaust, although many of the makers still use the latter method on the ground of economy and greater elasticity of the motor, because the compression is always the same.

There were several interesting features about the vehicles of Cottureau et Cie., who use a four-cylinder motor on their new light carriage, the cylinders being inclined in pairs at an angle of 45 degrees. The elasticity of the motor is increased by an arrangement whereby the advance of ignition gives a corresponding advance to the exhaust. This is done by moving the cam by a connection with the lever for the advance of ignition, so that the lifting of the valve rod is timed in a manner to always insure a good clearance of the cylinder. The incoming charge is consequently of larger volume, and gives a more powerful piston stroke, with the result that the fall of power with a reduction of piston speed is claimed to be much less marked than in other motors. The idea is one which certainly points to great possibilities of improvement in the gasoline motor. The magneto is greatly strengthened by coils which increase the self-induction of the circuit and give a stronger breaking spark.

On the Crouan cars great elasticity was given to the motor by automatically varying the quantity and quality of the gas mixture according to the speed of the engine; in other words the greater force of the piston-stroke compensates in a large measure for the falling off

in the centrifugal force of the fly-wheel. The motor is placed transversely in front of the vehicle with the two cylinders in the same axis and the changes of speed are made by fixing the wheels which are always in mesh, with leather discs under air pressure, this pressure being obtained from a tank kept supplied by a small air-pump.

M. Lepape, a well-known inventor, had a new motor combined with a pump to give an explosion at each revolution. By the side of the vertical cylinder was another of smaller diameter, in which the piston acts as a pump. This was connected with the induction valve



Richard's Exhibit

and the two pistons run on the same crank-shaft. The pump draws in the gas from the carbureter, and when the piston of the motor reaches the end of the stroke, and uncovers the exhaust valve near the bottom, the upward stroke of the piston in the pump sends the gas under slight compression into the motor, and drives out the burnt gas. The cylinder is thus cleared by the incoming charge. The motor runs at a thousand revolutions and is single-cylindereed of 12 H. P.

The Richard motor is lubricated automatically by the exhaust which forces the oil into the working parts.

Peugeot has now devised two and four cylindereed vertical motors

for his light carriages, developing 15 H. P., at about 1,000 revolutions a minute, with so little vibration that none of it is felt on the steering wheel. The induction valves are mechanically operated by a half-time cam-shaft, in the same manner as the exhaust valves usually are. The inlet valves are on one side of the cylinder, and the exhaust on the other, so that there are two half-time shafts. The governor is on the throttle, and the ignition is coupled to it, and is automatically advanced or retarded as the charge is increased or decreased. It can, however, be separately controlled from the steering column, so that the motor can be run fast on a light charge when desired.

The Société du Supra-Moteur had a motor of the horizontal type with two cylinders in the same axis, and placed transversely in the front of the carriage. The pistons work on the same crank-shaft, and as the four cylinders give an explosion for every revolution, the fly-wheel is dispensed with.

All the motors, it matters not whether they have single, double or multiple cylinders, are placed in front of the dash, not wholly as copies of the prevailing style, but because of the popularity of the double-seated tonneau and double phaeton body, which requires the motor out in front for convenience in getting at it, and also to balance the whole construction, and give the light carriage a long wheel base and low center of gravity.

The influence of the heavy racing cars has been paramount in producing this result, speed and power requiring an almost perfect construction, which has been reproduced in detail in the light carriages. Observers of the trend of the industry have noted this tendency and expected this ultimate result in the desire for speed.

Apparently a finality in design has been reached; French, German, English and American makers all producing one type, a type that will now be made in great quantities and good qualities, varying only in details of construction, and giving satisfaction to the user and profit to the maker.

It was expected that the show would bring to light great changes in carbureters, but only a few were seen. Pulverization and liquid spray systems were in great favor. Among the new things were the "Sthenos" carbureter, this being based upon a principle wholly new. Instead of the gas mixture being sucked in solely by the aspiration of the motor, it is carried up by an induced draught. One feature of the carbureter is an inverted cone, having an angle of 7°. At the opening of the spirit-pipe is a small cone, which can be raised or

lowered by a screw to regulate the quantity of spirit. When the motor draws in air, its expansion in the upper part of the cone creates a depression at the small base around the spirit pipe, and results in a rush of air which draws up the gasoline and projects it violently through the induction-pipe of the motor, and it enters the combustion



Two Leading Exhibits

chamber in a perfect atomized mixture. It also works well with a mixture of gasoline and alcohol, and kerosene can be used after the motor is made warm by using gasoline.

On a Schaudel carriage, the carbureter formed a part of the motor

itself, so that it is always maintained at the same temperature as the gas and run under any condition without varying the mixture.

While it is conceded that the French makers as a whole are leaders in the industry, it is not to be conceded here that it is wholly on original ideas that this leadership is due, but largely to their ingenuity and ability to adopt what is best in German practice (a good example of which is the Cannstatt-Daimler car construction) the English Napier and Wolsely, and the details of our best American practice, and combine them in their construction without giving credit to their originators and call the result wholly theirs. That the show has emphasized this statement in a marked degree, is the opinion of every unbiased observer.

AUTOMOBILE EXHIBITION IN COPENHAGEN

AN exhibition of automobiles will be held in this city from April 11 to April 27, 1902, under the auspices of the Danish Automobile Club and the Society for the Promotion of Industrial Arts. It will be held in the building of the last-mentioned society, and is designed mainly for automobiles, but some space will be given to motor cycles and articles relating to the driving of automobiles. The exhibition is intended to attract visitors from all the Scandinavian countries.

The conditions of the exhibition are as follows:

Notices of a desire to participate in the exhibition, containing information as complete as possible concerning the nature, size, weight, etc., of the machines, accompanied by illustration, if convenient, are to be sent by the 15th of January, and are to be directed to Industriforeningen, Copenhagen.

During February, replies will be sent stating the extent to which the notifications have been accepted and the latest day at which the articles must arrive at Copenhagen.

Motoring for Quail

WHEN I was invited to join a small party of sportsmen at Tom's River last November on a still hunt for the wily quail, and found I was to be conveyed thither by a fervent motorist in his new surrey, I was inwardly dubious, but, assuming my most nonchalant air, accepted without an instant's hesitation and, the day of departure arrived, donned that most unbecoming garb suited to the requirements of such a trip and climbed to my seat without an apparent quiver of fear. The black goggles seemed to smirch the sunny landscape and I felt that I resembled an Egyptian mummy or a newly stuffed sawdust doll but, as the friend whom I accompanied expected to profit by my knowledge of the route (gained on a previous bicycle trip), I braced up to meet the occasion and kept a good lookout ahead.

At first the gentle smooth motion seemed pleasantly exhilarating and I was congratulating myself on being along as "guide, philosopher and friend," but as the pace increased I found myself wrapped in an impenetrable cloud of dust and unable to distinguish an inch of the route, while as for hearing a word that my friend said, I might as well have been at one end of a boiler-shop and he at the other. Automobilists may well claim that the grumbling rustics intentionally collide with them for it's not within the power of anyone to manœuvre in such manner as to avoid that which he neither sees nor hears.

Presently I became aware by the inclination of his body in my direction that my friend was trying to ask me something, but what? Finally he put his mouth to my ear and screamed:

"Where are we?"

I replied in all sincerity:

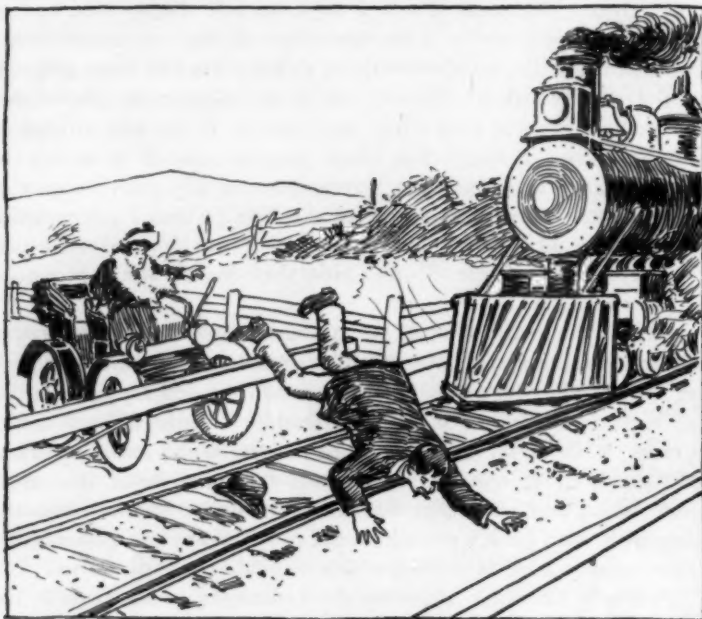
"I don't know, I can't see a thing." And that was as true a statement as I could have made under oath; in fact we might have run down a score of my nearest relatives and I would have been none the wiser. But the main route was straight ahead, as we discovered by halting for a survey, and we boomed along without hindrance till, suddenly, we heard an ominous sound—ominous and loud or we should never have distinguished it—the voice of the Big Brother of the automobile, a shrieking locomotive attached to the express that

was bearing the rest of our party to their destination and crossing our track at that point, the gates being down and traffic barred.

My friend had often boasted to me :

"How is it possible for an experienced motorist to run over anyone ! As for me, I can stop within one block and that, too, on a steep descent, at a high rate of speed."

I had always supposed that to be an exaggeration, but it was



A Sudden Halt

true nevertheless, for although we were almost at the bars when we heard the whistle he *did* stop, instantly, calling out to me as he did so:

"Hold on tight !"

This was well-meant but unnecessary advice, for I had been holding on to everything I could clutch ever since we started, and was just thinking tape-worms would make excellent chauffeurs, nature having blessed them with such extraordinary clinging capacity that nothing less than death loosens their hold. I continued to "hold on tight" therefore, but unfortunately, the generous man who gave me this most prudent counsel, neglecting his own precepts, vaulted

forward, shot over the bars and fell sprawling on the other side of the track, escaping the locomotive by a mere hair's-breadth. My first thought was that he was killed, my second that he might have chosen to die at a more convenient season for me, for, if you've never found yourself at the mercy of your own ignorance on some crazy machine, knowing that if you but stretch out a finger unwarily you're apt to strike some lever that will send you straight to hades without absolution, you cannot appreciate my feelings during this moment of suspense, till I dared look down, and found my friend painfully rising to a sitting posture and heroically contemplating his hands on which the skin was hanging like shredded wheat biscuit. Seeing my look of relief, he said :

"Did you see how quickly I stopped her?"

I ungenerously replied :

"Yes, and if we ever get to Toms River I suppose you will *stop* at the surgeon's?"

But he only asked "why?" with the most innocent air, so I let it pass. Motoring renders these unfortunates absolutely irresponsible.

We resumed our route exactly as though nothing had happened, at the same mad speed, no other accidents of importance occurring, unless you take account of a few dogs and chickens, a narrow escape with an Irishman, who, half tanked, and full of objections to automobiles in general, planted himself in our path with the intention of arguing the question, and a load of hay that toppled over at sight of our approaching machine. Some portions of the route were traversed like a cyclone, and once or twice I vaguely perceived through the dust an officer waving his arms to heaven in protest, but my friend assured me we were strictly within speed limits, except on unfrequented roads where there was no danger of encountering pedestrians or horses without timely warning.

Towards eve a slight shower laid the dust and rendered it possible to see our way, but the night soon fell and when we halted near a country inn, I thought my wise friend was going to postpone the rest of our trip till morning, so said :

"Is this a good hotel to put up at?"

"Put up," he echoed, "why we'll be at Toms River by midnight."

"That's so late for the country," I feebly remonstrated.

"But I started late expressly to try the new reflectors," he responded.

Whereat he proceeded to light two enormous reflectors, that

threw out a positively murderous flame which scorched the brain and eyesight, explaining proudly as he 'did so, that there would be no more difficulty in seeing our way now that the rain had removed the dust nuisance and we had the light of our reflectors to travel by.

And, verily, we saw ! The birds of the forest awoke and flung themselves against our lighthouses ; horses broke loose from their harness and galloped madly away ; men, women, and children fled shrieking across the fields to escape the light. And so, like primeval Gods we passed, shedding terror in our path, and the complete success of the reflectors was demonstrated to my friend's satisfaction who announced with ecstatic glee that they were "way ahead of a horn for clearing the road."

When we arrived at the goodly hotel with a clatter, at midnight, rousing all the inhabitants on the way (and having kept the rest of our party up till that hour awaiting us and fearing an accident), he enthusiastically announced that we had broken the record on road travel and expected to be congratulated !—but, as I said before, these motor fanatics are absolutely irresponsible.

Cramped, blinded, chilled and speechless, I was boosted from my seat, led into the warmth and pleasant dimness of the sun parlor that forms an introduction to the main part of the house, and left there to thaw out, while from below still was heard the motor-fiend leaking buckets of motor enthuse above a babel of friendly voices, checked only at short intervals suggestive of Jersey lightning and other liquid lubricants. But as an early start was planned for the hunters in the morning they soon dispersed to their rooms, and such quiet then reigned as only a country inn is capable of.

At early dawn the dogs and hunters proceeded by rail to the "happy hunting grounds," twenty miles out, chosen for the propitious stubble-fields in which the rag-time ragweed, whereon the quail doth feed, groweth abundantly. A little later with "Bob" to direct the expedition ("Bob" is that historical feature of the village by which, like "old Bill Jones," every doubtful statistic may be proved if only he is alive), we motored after them, bearing sundries to appease hunger and a mighty thirst. It was a typical gray November day—softly struggling between clouds and sunshine till noon, then closing down with thick banks of mist that finally oozed into raw rain at late afternoon.

En route, through the long stretches of heavy white sand—which is always "up to the hubs," as related by the motorist—and the resi-

nous odors of the pines which are the unvarying, predominant characteristics of this part of Jersey, our chauffeur's ardor being necessarily abated by the heavy travelling; I was able to listen to the reminiscent scenes of "Bob," the pioneer mail-carrier of these regions: how he bore the news during the war between the two county seats, straight through the forests when the trail was obliterated by snow-drifts, blinded by storm and wind, yet never missing a trip; and how, in the days of the early settlers in Ocean and Monmouth counties, in which parts Bob has always lived—and will die, if he has any voice in the matter—his forefathers buried their household goods, fearing the Hessians who harried these Dutch progenitors of the present inhabitants of Jersey; and many other historical incidents in which the memory of "Bob" revels abundantly. His is a soul which can no more lose its way to Heaven eventually than can his feet lose theirs on the roads of Jersey, which know him as their pilot. Everything along the route speaks to him of apple-jack. He stakes his reputation on this native liquid, and as he never had a headache in all his bibulous life, it's very probable Adam's consort knew what she was doing when she accepted that Jersey apple; so she fooled her liege lord, after all, and has done so ever since, till she asserted her "rights" and ate apples openly. Now, 'e knows she knows and watches out for 'er.

In the midst of one of our guide's most earnest discourses we rounded a turn from the wood-road we had been following, out on to the highway, and came upon our party bivouacking by the roadside round a camp-fire of pine branches that threw out a shower of sparks and balmy odors, while on the bank above rested the faithful dogs, Cy and George, with the guns stacked beside them. As we drew up with a flourish I heard "young Sawyer" say, with his stage-hero expression:—"and he weighed 1600 pounds without his pelt." By these tokens I knew they had been swapping bear stories and that this erst-while mighty hunter of the West had brought out his Sunday story with its "best bib and tucker," and was on his mettle, for he never produces his 1600 pound bear when a smaller one will do, being naturally of a saving disposition. I wonder why a man is always "out-for-bar" in his mind, no matter how small the game he's after in reality?

Sometimes it takes a kaleidoscope to follow Sawyer's fertile imagination in the hunting field, but as I have heard him tell this particular story several times and he never deviates from the original

plan I'll go bail for it, and it is really worth repeating. He generally tells it standing up and leaning on his gun, because it seems more impressive that way, and this is how he begins:

"We were walking up the shady side of a gulch (this story is located on Mt. Graylock in Idaho) when, in the middle of a berry patch about 300 yards distant, we discovered a large bear feeding on blueberries." He has already explained to his listeners that "we" includes a young Britisher who had been sent out to America by his parents to rough it in the mining districts, and incidentally, to prospect a little, and who, having besieged Sawyer a long while to show him a bear-hunt, was now being gratified. "Bruin's method of gathering the succulent berry," continues the historian, "was expeditious and accomplished by enclosing the complete patch in one of his huge, encircling arms and then mowing a long swath of leaves and berries with one swoop of his rough tongue, grunting as he did so with evident relish. 'By gad!' said the noble young Briton when he saw his game, and proceeded to make ready. I loosened a shell in my belt, gave the word, and we shot together. When the smoke rolled up the bear was rolling over, turning and snapping at his shoulder where one of the bullets had hit him (here "young Sawyer" looks modest and we all presume it was *his* bullet). A second round, and yet a third before Bruin discovered his enemies, then he lowered his head and came for us with his seemingly awkward gate, that covers ground faster than a horse can travel. I think my friend from England stood his ground for two more shots, none of which stayed the bear for more than an instant, who fell, rose again and came on with renewed fury. At length, when from the size of a Newfoundland dog, as he appeared when we first sighted him, he had assumed the proportions of the side of a barn, and, rearing on his hind quarters, lunged closer and closer, the Englishman dropped his gun and, with a yell that would have startled an Apache Indian, ran for shelter. Within 20 yards he encountered a young fir tree and started to climb it. Up he went, but reaching the top before he felt he was out of harm's way, he attempted to climb on, clawed space for an instant—supported by faith only—fell through the branches and immediately started to climb up again, evidently with the impression that he had steered straight for heaven during both laps, yelling as he went. Meanwhile Bruin lay dead within 40 feet of him, with 19 holes in his body; but it was over half an hour before the young man could stand unassisted or lift his gun. And the bear weighed 1600 pounds with-

out his pelt." Here Sawyer picks up his gun and walks away, but shortly returns to the circle to see if anyone is telling a better story. All good hunters believe their own stories.

Mid the cackle of lunch and good cheer I discovered that quail was shy and the outlook poor for the afternoon, if the forenoon was an accepted precedent, for the game bags were mostly hollow of results, and Ewert, who never looked handsomer or more truly hunteresque, wore a Christian martyr expression that hinted of traduced hopes. The resident member of the "Rod and Gun Club" eyed the landscape gloomily and the promised game dinner dwindled



"Clawed Space an Instant"

to a possibility of the one red-headed duck which was said to be reposing beside a cotton-tail in the ice-box at our hostelry.

But directly in front of the improvised camp was a particularly fine range of field which had been selected for first experiments so, after finishing our lunch and making everything snug in the motor, we left "Bob" in charge of it, went over the fence and started the dogs.

The preceding months, which had been almost rainless, had left the ground so dry that the birds seemed to leave no scent, as witness a peculiar incident that occurred at the start: in the middle of the first field a single quail had run out of the woods, and had crossed and recrossed his own trail many times, seemingly more intent on showing how far he could run in a given time than on feeding. The old dog scented him first, cautiously took a few steps and straightened out with a marvellous rigidity of point that was pretty to behold; Cy immediately came up, ran ahead of him, made a semi-circle and also came to point. Then the men walked up in line, urging on the dogs who took a few steps forward and pointed again, in exactly the opposite direction; and these tactics were repeated so often and so suddenly that I thought they were like to cause my destruction eventually, for I was so bundled up in my motor togs that such rapid evolutions were beyond me, and if I was not picked off finally by one of the shots I lay it to the fact that as they flushed their bird, after five minutes of this right-about-face business, I tripped on a blackberry-trailer and fell flat in the briers just as they shot, letting out a squawk of dismay that convinced them I was not killed, though my face looked like the map of Asia when they had assisted me to rise. And someone was mean enough to accuse me of being a "paper sport," because I was knocked out by a brier!

More fields, brown, dry and brambly—and a pretty covey of about twenty birds flushed a trifle wild and went scaling off into the swamp; on this the hunters ingloriously missed their easiest shot, with their first barrel, but redeemed themselves with the second—and broiled quail seemed to me really imminent at last. Though they followed up this covey through the brush, only one more fell a victim, and this, after they covered a space of fifty feet, inch by inch, was discovered flattened out on the ground right at their feet, neither dog having been able to scent him. Nothing was left of this poor cock bird but his head and shoulders hung up on a low limb, after Ewert's shot, and it was unanimously decided that, by every showing of circum-

stantial evidence, he must have been shot on the ground with a charge of No. 2 shot, though the gentleman advanced the time-honored excuse that he had not taken enough time to deliberate and had shot his choke-barrel, etc., etc.

Two more fields were drawn—barren ; old George was showing signs of fatigue, hanging up on the top rails of the high fences in helplessly pathetic fashion as he attempted to leap them, and we were about considering a return to the motor when the warning honk of a wild goose arrested our attention. Directly over us was passing a flock of fifty-odd birds, coming down ahead of the storm which they seemed to have brought with them, for, as the last of the V-shaped line disappeared in the thickening mist-clouds, our upturned faces were wet with the falling damp which had formulated into splashing drops at last. We retraced our steps to where "Bob" awaited us with the serenity that nothing dampened ; for had he not his inner coating of good, warm apple-jack always with him?

As it was but $2\frac{1}{2}$ miles to a station we motored over and took train from there—all but "Bob" and the chauffeur—the rain settling down heavily and determinedly.

All that night the wind gouged great chasms out of the darkness, and the rain deluged through this historical village of "every-day'll-be-Sunday-by-and-by" atmosphere which reeks with the saline odors of the new-laid oyster that is native to Barnegat; and when morning disclosed the results, Tom's River, from which the place takes its name, was found to have encroached to the very roots of the hotel, and no such high tide had been seen for 20 years. I rose early and descended on a scene of wild excitement. The dogs had been nearly drowned in their kennels, likewise the rest of the barn-yard contingency, and "Pete," the famous decoy goose of these regions, known for miles about, had not where to lay his webbed feet, except in the water, which state of affairs had so terrified him that for half the day he forgot to honk when his wild kindred flew over him, though he never failed to keep his left eye cocked heavenwards as usual. Till the weather should settle and the roads dry up somewhat it was not considered wise to start on our return trip by motor, so we patiently bided the "game dinner" that was to reward us for our efforts of the day previous.

Now I've heard of some strange dishes, and partaken of many, but I never met a real tragedy in culinary art till I sat down to that much anticipated repast and encountered quail soaked in sour

milk for twenty-four hours previous to boiling!—and one's own hard-earned quail at that. But this was "Fraulein's" painful manner of cooking them—likewise the red-head, only he seemed to have suffered more than the quail and died a harder death, having been immersed in this Anna Held bath for four days! Then they were all boiled to rags and tasted like so much boiled calico, as far as any distinctive flavor was concerned. I didn't dare shut my eyes once for fear I should forget what I was eating. And I thought of "The Shut-Eye Sentry"—and mentally parodied it somewhat after this fashion:

*Then it was "Rags! What, rags?" this dish in the German style,
'E's done to a mussy hash, but, boarder, shut your eye,
An' it's "Pass! Wot t'ell!" Oh, ain't e' sozzled vile!
'E needs an affidavit—this poor culinary guy.*

Thus sadly ended this idyl of the brown November quail and here, too, ended the motor trip for me, as by noon rumors of bridges swept away by the violence of the gale, and damage done all along the road, reached us in such convincing form that some days' delay seemed probable and I regretfully returned to the city by train that night—*very* regretfully, for after all, one taste of motoring begets a desire for another; and in this respect it differs most essentially from soused quail.

A. L.

For . . . there's only one sport in this world for me;
Only one thing has my sympathy.
Though officers are snippy
And gasoline is drippy
Yet . . . there's only one sport in this world for me:

Existing Automobile Mechanism

By HIRAM PERCY MAXIM

PURSUANT to the program as outlined by Joseph M. Hill, Chairman of the House Committee of the Automobile Club of America, the third lecture for the season was held in the club rooms Tuesday evening, December 31, the subject being "The Automobile as it Exists To-day." The lecturer was that eminent engineer of the Westinghouse Electric Company of Pittsburg, Hiram Percy Maxim, who for some years up to last spring was connected with the Electric Vehicle Co. Mr. Maxim's words follow :

I feel that the present is a most important time for the American automobile engineer to do a little talking. The signs are pointing to the rapid approach of the critical period in the development of our American automobile industry. Whether we will repeat the performance we made with the steam locomotive and the electric street car, with our automobile, or will let some other nation do it for us, will soon be determined. It seems to me, therefore, that the engineer ought to do all in his power to assist toward a general understanding without prejudice of the practical possibilities and limitations of the more important automobile apparatus.

The two pieces of automobile apparatus which seem to me to be the most important are the automobile gasoline engine, and the automobile electric storage battery. A thorough consideration of either is, of course, a thing of some magnitude, and would take far more time than we would be able to devote in one evening. A very general consideration only, however, is better than none at all.

From both a commercial and an engineering standpoint the gasoline engine has some very alluring peculiarities. It is a prime mover, able to use a fuel which is cheap, liquid, easily handled, and universally obtainable ; it ought to be able to produce a horse power hour* out of less fuel than any other prime mover known ; it ought to consume no other supply than this fuel, barring, of course, lubricating oil, which is negligible ; it ought to be independent of any temperature or climatic conditions ; it ought to be able to be started and put

*Lifting 33,000 pounds 1 foot high in 1 minute and do it for 1 hour.

into service with less preparation than any other prime mover yet produced, and it ought to be entirely automatic, and require no consideration while running.

It has two inherent disadvantages. It cannot start under load, and it cannot be overloaded. The first means the necessity for a disconnecting device in order that it may be separated from its load while being started. The second means a change gear apparatus so that abnormal torques can be obtained by taking part of the speed to get them.

Now let us see how this piece of apparatus has worked out in practice. Instead of living up to our expectations, it has given us an enormous amount of trouble. It has behaved in the past so abominably that even public attention has been attracted to it. Some of its performances have been such as to cause another prime mover to be developed, to step in, and, as it were, come to the rescue in spite of inferior inherent characteristics for automobile service. In many cases capital has been seriously discouraged. The public at large, excepting perhaps those in our large Eastern cities, where automobile education is on a broader plane, stand prejudiced against it.

Now, why has all this been the case, and what are we to expect in the future?

In my opinion, we Americans, as a whole, have ourselves to blame. We have been in too great a hurry, have been too confident, too anxious to be radical and apply our far famed American cheapening methods, and have not sufficiently digested what has been done by those who have fully ten years the start of us.

But now, whether these are or are not the correct excuses, it is all ancient history, and we are concerned only by the present and future. Our recent automobile show makes a good point from which to judge afresh. We found by it that in spite of the past the gasoline engine dominated in number and improvement every other form of motive power. We found that the painful exhibitions of the past were entirely lacking. We found that men no longer stood before a piece of apparatus too grotesque even to deceive the unmechanical public and proclaimed its virtues while the machine contradicted every word uttered. Noise, jar, complications, necessity for mechanical dexterity, all perhaps illegitimate from an engineering standpoint, yet vital objections, so far as the public were concerned, had been reduced as if by magic. American simplicity had asserted itself more conservatively, and on a sounder basis, the experience of Europe was

more carefully and less sentimentally considered—had been adopted where good and rejected where bad or unsuitable—and scientific analysis and study of past troublesome details were evident on all sides. In other words, the American engineer and mechanic had seen the errors in his gasoline automobile engine and was proceeding in true American style to correct them and make up for lost time.

In the majority of the gasoline automobiles exhibited at our recent show in Madison Square Garden, and in others I know of, water cooling apparatus is in use which requires less than 25 pounds of water to be



Percy Owen in his 12 H. P. Winton

carried for runs of several hundred miles in length. Moreover, by the addition of enough chloride of calcium to give 50 per cent. saturated solution, this water is rendered unfreezable, and therefore stands independent of any temperature condition. Surely the other prime motor, steam, must envy the gasoline engine these features.

In all of our latest American vehicles the water cooling apparatus is also very similar. The circulation is forced by means of a gear, or centrifugal and consequently valveless pump. The latter is gear-driven and of moderate speed, instead of friction driven and of very high

speed, as in European vehicles, and is consequently, as certain and sure as a piece of mechanism can be. It is frequently attached to, and is virtually a part of the engine, although easily removed bodily in case of need. The cooling is usually accomplished in strong coils built in a frame and contained in the bonnet, where they are protected from injury and form an eminently practicable piece of apparatus.

And now for the other supply, a very troublesome one of the past, and one which brings up some very vital questions, the igniting current.

In the latest and best engines, both here and in Europe, the ignition is electrical, and the current obtained from a small electric generator run from the engine. This of course removes the igniting current from the list of supplies, and by so doing has avoided the treacherous primary battery and inconvenience attendant upon the necessity for recharging a secondary battery, and has generally effected a very considerable improvement. But in the majority of cases the thing has not seemed to have been thoroughly done.

One of the basic requirements of the reliable gasoline engine is certain ignition. In the majority of our machines the method of driving the generator is by friction wheel or belt, from surfaces difficult or impracticable to keep in suitable condition. This in itself I cannot believe to be reliable. Then again, in many cases magneto generators are used, or generators having permanent steel magnets for fields, and these are located in close proximity to highly heated surfaces. In other kinds of work a similar arrangement has had to be discarded, owing to the deteriorating effect of even relatively moderate temperatures upon the permanent magnets. That this promises also to follow in our automobile magneto generators seems to me therefore to be probable.

In other particulars, however, I think we have reached a very practical and reliable development of the igniter current-producing apparatus. For instance, we have the governor clutch on the generators so that even where they are geared up high enough to insure a speed which will give sure ignition at the lowest engine speeds, they are not permitted by these governors on very high engine speeds, to run to a point injurious to the sparking contacts or generator bearings.

Again, on the best examples provision is made in a practical manner for starting. A small dry battery is usually switched in for this and switched out when the engine has been started and has attained enough speed to enable the generator to generate.

On the whole then, it would seem that in the supply of current for ignition in our latest American machines we might be open to criticism only in the method of driving our generators and in the use of permanent magnet fields. Neither of these troubles is difficult to correct.

Concerning the actual spark-producing apparatus, as it exists, it may be said that we have two systems in use—the secondary or jump arc, and the primary or mechanically drawn arc.

The former is undeniably delicate, complex and costly. On a single cylinder engine it is bad ; but as the number of cylinders go up,



A New White Steam Carriage

it gets rapidly worse. Just the same, it is the system most in use. I believe the principal reason for this is that it is suitable for extremely high engine speeds.

The latter form of primary is simple *per se* but complicated mechanically when we attempt to advance or retard the timing of the spark in order to meet widely varying engine speeds. It is also troublesome in many of our engines through the burning away of the sparking points causing unreliability.

Therefore, it does not seem to me that the secondary system will

ever give us the degree of practical reliability which is demanded, for instance, for utilitarian services. It can, and is, in thousands of cases, working to-day where pleasure only is involved; but this is not all we want of our American gasoline engine.

In the case of the primary system, on the other hand, we are finding that the correction of other difficulties has a very favorable effect upon its difficulties. For instance, when we reduce the speed of our engine enough to give the parts a chance of reasonable depreciation and a reasonable length of life, and to reduce the noise also to a reasonable point, we find that there is less necessity for advancing and retarding a good healthy primary spark. Then if we go still farther and put the spark in the place in our explosion chamber which will favor the most rigid flame propagation, and also, if we draw our arc with a little more suddenness at the higher engine speeds than we do at the lower we find there is no necessity at all for advancing, especially if we put in a little surplus engine power and avoid continual demands for the maximum.

The burning away of the sparking contacts with this primary system has been a serious trouble, and is of course, in principle, bad, as the contacts are aiming continually at their own destruction. It is the same old question of wear, however, and if we give enough metal per unit of strain we can get a good life. It seems to me that by making our points generous and large, we will be glad to count upon a very small amount of uncertainty at this place.

On the whole, then, as regards spark-producing apparatus, it would seem that while we may still be open to criticism on the score of rigid certainty and reliability yet no one else is any better off.

And now about the inherent disadvantageous features of the gasoline engine—the inability to start itself under load and the inability to accept overload. These disadvantageous peculiarities have threatened the gasoline engine's automobile chances more than once in the past. Coupled with the faulty ignition and carburation, lack of sufficient power and bad mechanical constructions of the past, they have made a strong case against the engine, even in the eyes of many of its original supporters. Especially has this been the case in the eyes of the general public and the faint-hearted manufacturer.

That, in the face of it all, the engine has not been downed by steam and electricity, but has, instead, within the last few months assumed the aggressive, speaks for the superiority and the permanence of its principle.

The inability to start itself under load means a disconnecting device, so that it may be separated from its load. This appears in the form of a friction clutch. The inability to accept over-load requires alternative gear reductions, so that abnormal demands for torque can be met by driving through a greater gear reduction and at the sacrifice of a proportionate amount of speed. In both of these cases the development has been similar to the development of primary ignition. Other improvements have reduced the difficulties.

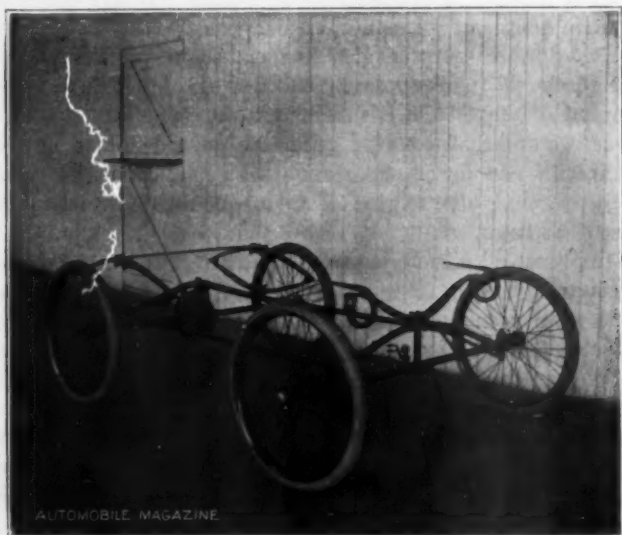
In our recent American machines we find the tendency to increase the number of cylinders and the horse-power per ton. This results in a surprising increase in flexibility of the engine. Where the cylinders are three in number, for instance, and of generous dimensions, we find it will slow down to surprisingly low speeds, and yet develop a perfectly smooth and regular rotating effort or torque. Where the maximum speed of the vehicle is intended to be moderate, say 30 miles per hour, we find that one gear reduction is used almost universally and that with one lower one, usually of about twice the reduction ratio, the engine is able to give all the torque that is necessary for the most extreme cases.

Again, instead of suffering from a great disadvantage because the engine is not reversible, it turns out that it is better that it is not, as we can keep our engine at speed in one direction and by engaging ahead or reverse gears, we can get with entire ease and convenience a smooth yet as vigorous acceleration as our tire traction will admit. This reduces the difficulty of the change gear problem very materially. For ordinary speeds and service only three gear changes are needed—one for extraordinary pulls, one for backing, and one for all normal running. The operation of the vehicle, moreover, becomes immensely simpler. Where high speeds are required, other gears must be added, but for all services up to 30 miles per hour, where there is more than one cylinder and the engine power is even but fairly generous, two gears ahead and one back can be proven adequate.

While it is a fact, that many of our American machines have two gears, it is not a fact that all of them have the engine proportions that ought to accompany it, and it is here that we stand most seriously open to criticism, as far as our change gear apparatus stands, in my opinion. In Europe the number of gears is usually three and four, the automobile having there a strictly high grade sporting office to fulfill, where speed becomes a prime factor. In such a case, number of gear changes, of course, becomes necessary. To show

that even with extreme speed, however, the number of gears is *yet* a question of proportions, one of the recent speed and hill-climbing winners in France has but one gear.

The friction clutch, the closely attendant adjunct to the change-gear apparatus, while a conventional piece of mechanism, has been the seat of a lot of errors and mistakes. Metal to metal surfaces, in the continual slipping necessary in ordinary street or road service, would grow rough, and either not let go, or seize, and grip viciously, and bring severe strains on the change gears. Lubrication has either been imperfect, impracticable or of no avail. In our most recent and



Geneva Running Gear

best machines we are, in my opinion, not yet over these troubles. Only in a few of them are the clutches made so as to be independent of lubrication, easily accessible, able to slip little or much, wear slowly, and yet not stick or grip viciously.

In Europe the cone clutch is most frequently used and has worked very satisfactorily, but has objections in the way of end thrust and fly-wheel effect, which does not promise well in utilitarian service.

In America we have shown a marked tendency toward the combining of the gear change and the friction clutch in one device, which

we have called a differential transmission gear. In it, the great claim is that there is no movement of any of the parts when in the normal gear position. We rarely see one, however, that has either a correct proportioning between normal and low gear, or the locking friction clutch, which has not all the old faults we know of in the past. In the case of the low gear it is almost always too low, making the step between it and the normal too great. In the case of the locking, or normal-gear clutch, it is usually one of the regular stationary types, which experience has proven is not satisfactory for the continual and graded slipping necessary in ordinary street service.

We frequently hear in rebuttal to this, that with a multiple-cylinder motor, the engine can be run so slowly that a slow enough vehicle speed can be obtained without letting out the clutch. In practice this does not turn out best, however, as to get quick acceleration after slowing down we need the inertia of the revolving fly-wheel to help pick up the load, and this cannot be obtained if the fly-wheel slows down *to too low a speed*.

This closes as much of a consideration of the apparatus of the recent automobile gasoline engines as we can afford in one evening. Of course, it is not complete without including such things as automatic lubricating apparatus, controlling systems, engine locations, accessibility and possibly, also vehicle frames. But they would take entirely too much time.

As a summary of the gasoline engine, I shall say, that taken as a whole and as indicated by what we have on the market to-day, it stands wanting *in ignition apparatus generally, in the proper proportioning of number of engine cylinders, engine horse-power and gear changes, in friction clutch constructions, and in not providing in ordinary machines intended for the public the automatic governor*.

As in the case of the gasoline engine the automobile storage battery has had a checkered career. In fact, I believe the automobile storage battery could give the gasoline engine points. But again, let us neglect all this past, and concern ourselves only with what we have to-day, and what we have a right to expect in the immediate future.

I believe there is generally more prejudice and less knowledge concerning the electric storage battery, and what it will honestly do, and what it really requires, than any other piece of automobile apparatus that is one-half as much used. We continually hear broad and sweeping condemnation in one breath, and amazing claims of mileages and capacities per unit of weight in the next. As a matter of fact, the gen-

eral lack of knowledge concerning the storage battery has caused, and is causing it to suffer just the same as has been the case with the gasoline engine.

In the beginning, the lack of knowledge of its necessities and care, even on the part of the manufacturers, caused it to turn out in



Grout Steam Carriage

practice just about as far from what we originally had the right to expect as anything could. But again, notwithstanding all this and addition of the public prejudice added, the many extraordinarily advantageous features of the system of which it was a part prevented its being kept down. To-day we have in it a piece of apparatus which,

far from perfect, yet possesses possibilities which compel its consideration.

As an example, the best automobile storage battery we could buy three years ago had a maximum capacity at a certain discharge rate of $2\frac{1}{2}$ ampere hours per pound of complete cell. That meant that with a vehicle of the same style and general characteristics then demanded the maximum weight of battery that it was practical to put into it, could not in every day service be counted upon to average more than 20 miles on one charge. It had, where it could be treated individually, and with skill and understanding, relatively few ailments, and could be counted upon to have a life of about 100 vehicle discharges before losing 50 per cent. of its original capacity.

To-day, barring patents, we can buy batteries which have a capacity at the same discharge rate per pound as before, of $4\frac{1}{2}$ to 5 ampere hours per pound of complete cell.

This means that twice the mileage is to-day obtainable, in the same vehicle and with the same weight of battery. But what is more important, the positive plates of these batteries (which are the minimum life factor) will give, where certain well understood and easily avoided abuses are not practised, a life of at least 125 complete vehicle discharges, without losing any of their original capacity. Taken as 40 miles per discharge, this is 5,000 service miles that the storage battery of the best type of to-day can be absolutely counted upon to give.

When we look for the causes of this improvement we find satisfactory and reasonable ones. The battery plates are made with many times more active material upon them. They are provided with separators, which not only give plate separation, but form a veritable lock for the active material, absolutely preventing its escape from its plate.

The plates and these separators and many details about the jar, are carefully proportioned so as to ensure that the combined element, when it is in place, forms a solid, self-supporting structure. Except by the most violent formation of gas is it conceivable that any of the active material can get away from the plates.

As an instance of the effectiveness of this construction, which is becoming common in all the best types of pasted batteries, I have seen several of them after the completion of the rooth discharge. The separators were actually an integral part of the plates. They could not be removed without taking the active material off in large sections. This certainly made it seem evident that one of the most serious diffi-

culties in past batteries has, in these latest types of storage batteries been permanently overcome.

The constructional features of the grids do not seem to affect, to any material extent, the capacity per pound, provided they do not present an unnecessary amount of dead rot. It does affect the life, however, as if the positive grid is so arranged as to leave important parts too much exposed to oxidizing action, they are soon weakened enough to break, lose conductivity, and suffer permanent and serious reduction in capacity.



Convertible Dos-a-dos and Touring Steamobile

The separators, which seem to me to be chiefly responsible for the increased practicability of the recent storage battery, are usually made, in all of the different types, of thin wood. They are cheap, porous, very slowly affected by acid, and when made with small vertical ribs, furnish the necessary separation for acid space between the plates, and furnish an admirable surface for holding the active material closely against the grids.

This, of course, as far as it goes, promises us practical results. But nevertheless, even *with* all these, and the many small detail im-

provements, which we have not time to consider here, our automobile storage battery is still *wanting*, if it is open to injury by ignorance or carelessness in charging, the place where most of the injury of the past has been caused. Violent overcharging would burst off anything.

We find upon looking that this point has been met by the automatic charging outfit, which has appeared recently on the market. It is provided with a resistance, marked to suit the different standard makes of electric automobiles and when used in conjunction with suitable current, automatically sets a *rate*, which is safe. Then, when the voltage across the battery terminals indicates that the maximum safe *amount* of charge has been given, it automatically cuts out.

Our batteries thus, either in the owner's stable or in a garage, need no longer be dependent upon the watchfulness and knowledge of an attendant for their correct charging. Our past experiences have proven that this cannot but have a most advantageous effect, and still further add to the practicability of our automobile storage battery.

There seems to be every reason, therefore, for believing, which I do, that our present automobile storage battery, as our manufacturers know how to produce it and to protect it to-day, is, even in untrained hands, as practical a piece of automobile apparatus as we have before us. And it is the American engineer who has made it so.

When Proctor's Theatre, Newark, was dedicated on January 6, the seventh theatre was added to the influential and prosperous Proctor Circuit. The policy of presenting high class vaudeville will be maintained in Newark, and the best attractions money can procure will be presented weekly. Two performances will be given daily, popular prices will prevail, and the new theatre has taken its place as Newark's leading family resort. The house has been built for Manager Proctor at an expense of \$250,000, and is admittedly one of the handsomest and most complete vaudeville theatres in America.

A Non-Freezing Cooling Liquid

ONE of the annoyances of water-cooled gasoline motors is the possibility, if not probability, of the circulating water freezing in cold weather if the machine is left standing. On this account it is often necessary to let the motor run when otherwise it could be stopped, saving both gasoline and annoyance to others in the vicinity. Glycerine and other solutions have been recommended, but they have been considered as experiments and have not been generally adopted.

The Merrimac Chemical Company, 75 Broad Street, Boston, are making a solution of calcium chloride which will not freeze at zero and only boil at 225 degrees. This would seem to cover all the ranges of temperature which automobilists are likely to encounter. This solution is furnished ready to use without being diluted, but all evaporation is to be replaced by water. It should not be allowed to evaporate to less than $\frac{2}{3}$ its original volume on account of becoming too concentrated. Any loss by leakage should be replaced by fresh solution.

This solution cannot be used for steam carriages, and the manufacturers also call attention to the fact that, as the corrosion of aluminum is increased by the presence of chlorides, it is necessary to carefully watch its action when employed in connection with parts which contain aluminum. It would seem as though this should be very popular with users of gasoline machines during the winter months.

Nothing that has ever been devised comes anywhere near being as suitable for traction purposes as the electric motor. It is able to start under any load, able to accept any over-load up to the point of actually burning up, of ideal mechanical simplicity and suitability for connection to the driving wheels of a vehicle, absolutely automatic in its running, and independent of any consideration, preparation, mechanical knowledge, or skill on the part of the driver of the vehicle it propels other than that necessary to guide it.

Seen and Heard

By the "Senator"

SPEED MACHINES

THE building of speed machines promises to be quite epidemic and the poor record will have a hard time of it in trying to elude the men who believe that 35 seconds is not impossible for the mile. The wide publicity given to record trials in the past may be toned down somewhat in the future, judging from what the business manager of a big New York daily told me recently. There is an impression in the business offices of the leading New York dailies, and the subject was up for discussion the other day at the Press Club, that the making of these records is purely free advertising sought after and got by the manufacturers of automobiles, and the aforesaid astute business managers propose to put a stop to some of it unless their business columns show corresponding encouragement. The same thing occurred in the early bicycle days and it was a lesson in free advertising to the newspapers. The time came when the mention of the make of a bicycle was as rare as swans in winter. But this need not discourage the record-breaker. He can make use of his records in the much-abused trade journal, besides using them in a legitimate way in his advertisements, circulars, etc.

SPEED LAWS

The disregard of speed laws, especially in New York, and the continued violation of same, has started the New York dailies writing editorials against the practice, and the eminently respectable and conservative *New York Times*, which is a good paper, advocates imprisonment for the reckless chauffeur. It might be well if the culprits were warned, say for the first time, fined for the second and put in limbo for the third, as that is the only way we can prevent a certain uprising against the automobile by the people. Of course, there are some

excuses to be made at the breaking of the speed rule at certain times, but there is no excuse or palliation for the man who makes a practice of racing through the streets and giving the policeman what he calls "a run for his money." Imprisonment, I think, would about fit the case, and the Automobile Club of America might do a worse thing than advocate the jailing of a willful and persistent violator of the speed law in cities. If this is not done the newspapers may work up a crusade against the automobile and the trade and sport will suffer accordingly.

SPEED IN PHILADELPHIA

Speaking of speed, I was walking along North Broad Street, Philadelphia recently, when a steam carriage came bounding along at fully twenty-five miles an hour, and this speed is not exaggerated by any means, as I have done a few thousand miles myself against a watch and in races where the bicycle was my pony. Noting the pace and remembering that the speed limit in the alleged slow town was under twelve, I crossed over to where a Quaker City "bobby" was standing (who had duly taken notice of the racing chauffeur through the corner of one eye, with his head inclined after the fast receding automobile). I said to him, "What is the speed limit in Philadelphia?" and he said, "Eleven miles, or rather from eight to eleven, according to location." "Well," I returned, "what do you think of that speed," indicating the flying aforesaid racer, "I suppose you wink at that?" "Well, yes;" the preserver of the speed limit replied, "especially on a street like this which is broad and asphalted. My observation has taught me that the average automobilist can avoid accidents owing to the width of the street and the quickness with which they stop. Why," continued he, "the other day an automobile with two men in it came dashing down this street at about thirty miles an hour. A woman started to run across the street, and not wishing to risk a collision, the driver of that automobile jammed on the brake, reversed his power and came to a stop within twenty yards, but the stop was so sudden that the man who sat alongside of the driver was pitched headlong out in the street. The woman escaped. As a rule, however," concluded the Quaker City peace preserver, "I prefer to see a moderate speed and think it will be for the best interests of the automobile business and sport, if the chauffeurs will at least curb their speed proclivities in cities, especially where there is a lot of traffic.

AUTOMOBILE AGENTS

The automobile agent is having his troubles and does not know exactly "where he is at." The writer has met several agents the past few weeks and they are more or less dissatisfied with their treatment at the hands of certain manufacturers. One particular manufacturer of the West, whose machine is having an undoubted boom, perma-



Indian—"Ugh! Me got heap bad 'pipe dream'"

nently, I hope, has quoted a price to all comers, which leaves the agents a very narrow margin. This particular machine has been selling at \$600, and the net price to small dealers, I believe, is within \$30 of that amount, but deducting from that small margin the price of crating and shipping, the net profit to the agent is somewhat less than \$25 per machine. Considering that the agent is the man who will have to bear the troubles of the buyer, and will of course report all little defects, and undertake to have them set right—he naturally believes that a little more discount should be allowed him, if he takes trouble from the shoulders of the manufacturer. The latter should be glad to have some one take the many little difficulties off his hands, and who is more able to do this than the local agent who is on the spot? With this arrangement of affairs the buyer need not wait for word from the factory to obtain information regarding his automobile.

It seems to me that the agent will be a necessity in selling automobiles, and the buyer will trust the local representative to see that he receives fair treatment and general satisfaction in his purchase. In other words, the agent is the one who is expected to "make good," and not the manufacturer—the customer considering him secondary in importance, compared with the one to whom he gives the order.

GASOLINE TROUBLES

Many trivial things occur which are not much in themselves, but they need attention. I have heard many good stories recently regarding same. One especially that was told me by James S. Holmes, Jr., of the Remington Automobile Co., of Utica, who relates about shipping a gasoline machine to Atlanta, Ga., and his consequent trouble. It seems that Mr. Holmes was very careful that this machine was in "apple-pie order," and as nearly "fool-proof" as possible before leaving the factory, because the distance was great. The machine duly arrived in Atlanta, and the enthusiastic purchaser immediately wrote a letter that this particular Remington was a "daisy," and like "good wine needed no bush." A week later, however, he wrote that while the machine was a good thing to look at, it was absolutely worthless, as he had almost worn his arm off trying to start it. This naturally puzzled the genial Holmes, who wrote everything he could think of about this machine and its construction, but correspondence about the trouble lasting nearly a month, he was getting desperate, and thought he would have to go to Atlanta to set the matter right. One evening he had returned to his factory from a trip, and there waded into a four page letter from Atlanta, damning both him and the machine, and said that it had not run a mile in three weeks. Mr. Holmes sat down and in the absence of his stenographer, wrote a pen letter, going over the machine in detail again, and at the bottom of that letter a thought occurred to him to put a foot-note as follows: "Are you sure that your gasoline is all right, and that it is 76 degree test? Go out and get a hydrometer and test it." In three days, along came a telegram: "Machine all right, see letter just mailed." The letter stated that the local gasoline dealer had sold him kerosene by mistake, and that he had just returned from a 30-mile trip, and that the machine could not be bought for \$3,500 unless he could get another one. An agent on the spot would be able to attend to such little troubles, and the manufacturer who wishes to see that his goods get fair treatment should also make up his mind to treat the agent

fairly if not liberally. Mr. Holmes believes in the dealer and will give him good treatment.

MOTOR BICYCLES

The motor bicycle will not down, but it certainly has had its ups and downs and cannot yet be said to have hitched on to public opinion as favorably as the few makers would desire. It is the opinion of the more recent manufacturers who have undertaken to make motor bicycles, that a good deal of the lack of interest in this machine can be charged up to the imperfections of the earlier motor bicycle. In other words, there was more trouble with the motor bicycle to make it go than there has been with some of the automobiles, and that is saying a lot. It is the opinion, however, of good judges that the motor bicycle has come to stay, and that the "motor that motes" will have a good run for its money. It was suggested to the writer by Harry Dunn, of the Fisk Type Company, that the bicycle could be used by travelers who had no samples to carry and that they would save money and time by using the motor bicycle to make their calls, especially in the small towns where the jumps are not too large. It would not only be a saving of mileage on the railroads, but it would also save street car fare and the traveler can go right to the door of the firm he wishes to call on and there will be no waiting for trains or street cars. The motor bicycle will be a compromise where the man cannot buy an automobile, and besides, Mr. Dunn points out the fact that the average buyer who would wish an automobile cannot store one, especially if he lives in a flat. The motor bicycle would save storage, to say nothing of repairs to him, so I shall certainly expect to see a revival and a stable business in these machines, and it will not be surprising if 1902 will commence what will be satisfactory sales of the little "choo-choo."

PARKIN MOTOR

Speaking of motor bicycles, reminds me to say a good word for the Parkin motor bicycle, which is built in Philadelphia, and which has done so well as the record creator, with Young Master Parkin, who commenced when he was 11 years old to manipulate a motor bicycle. He is now only 13, and I give his picture herewith, which was taken in Philadelphia after he had made a clean sweep of some records. To understand the speed this $2\frac{1}{4}$ H. P. motor

makes, it is only necessary to say that he was recently timed a mile in 58 seconds, and Mr. Parkin, the manufacturer, states that the motor is capable of 50 miles per hour. The frame construction of the bicycle is a patented feature and is exceedingly strong.

One of the features of the motor is the long fin of the cylinder, which is longer than any other used for cooling purposes. Master Joe took part in the Madison Square Garden races recently, and surprised the old motor bicycle men by the speed he got out of the Parkin. It is the intention of the company to market quite a num-



Master Parkin on Motor Bicycle

ber of these motor bicycles and they have already sold many, which are said to be giving every satisfaction. They will also supply the motor for automobiles and other purposes. The company's factory is located on North Broad Street, Philadelphia, and the Parkin Motor Bicycle Company would be glad to forward their descriptive catalogue to all inquirers.

TIRES

The matter of tires for automobiles is still one of the leading

questions and there is no doubt that there have been a great many improvements recently in automobile "shoeing." There is a pretty race on between the leading manufacturers for the business, and I hope to see still further rivalry, for the good will and patronage of the automobilist, among tire manufacturers. The Hartford Rubber Works Company are putting forth fine efforts to capture the leading position and have had quite a tussle with The Diamond Rubber Company in that respect. President L. D. Parker, of The Hartford Rubber Works, will bear watching, as he is most resourceful, has a splendid plant behind him and is handling his forces in the usual masterful style which this comparatively young man has developed. I have always been a believer in the Munger vehicle tire, especially for heavy work, and I trust to see shortly that Mr. Munger has completed his preparations for placing the same on the market in large quantities and that a tire suitable for light machines will also be included in the "bill of fare." The New York Belting & Packing Co. have undoubtedly made good progress, and as this tire is practically puncture proof, it should be in vogue and I hope that Mr. Hayes, the tire manager of the establishment, will be fully repaid for the hard work he has done in the past.

A Handy Pipe Wrench

THE wrench here illustrated should prove a handy tool to any automobilist who has slight repairs to make on the road—and who has not? It will take any size pipe, bolt or nut from $\frac{1}{4}$ inch up to $\frac{3}{4}$ inch in diameter, and as it weighs only 8 ounces and



Mossberg Eagle Wrench

is but 6 inches long, it can easily be carried. As will be seen it is always ready for anything within its capacity, so that the maker's claim that it will grip like a bull-dog but has the "let go" capacity as well, is true. It is made by the Frank Mossberg Co., Attleboro, Mass.

America's Pioneer Automobile Clubhouse

THERE used to be a saying among wheelmen of Boston, in the old days of the bicycle's popularity, that all roads started from Copley Square. The saying is as true for automobiles as it was for bicycles, for the Square is the center of the asphalt district in town, and the terminus of most of the best routes out of town; and it is little wonder, then, that the members of the Massachusetts Automobile Club are deriving great satisfaction because their trim little brick and stone clubhouse is hardly more than a stone's throw from Copley Square, yet handy to the Boston Athletic Association, the Hotel Lenox, and just a step or two from the various Back Bay hotels and clubs. Although Boylston Street on the stretch from Dartmouth Street to Massachusetts Avenue is traversed by two car tracks and is not yet coated with the blessed asphalt, it is a main street and is good enough, and the clubhouse, though it looks out over the tracks of the Boston & Albany Railroad to the big Mechanics' Building and the apartment houses of Huntington Avenue, gains in light and sunshine and its interior is thereby more attractive.

One might think members would go to the club house chiefly to look after the automobiles. Perhaps they do. But there is a strong social side to the club, and if this feature is as pleasantly in evidence in the future as it was on the evening of the house-warming, January 1, the club will surely be successful. There were almost 300 members and friends who spent all or part of the evening in the rooms on that occasion—enough of them to put life into the hitherto tenantless interior. Those who had not been into the building before were well pleased with what they saw and were not reluctant in saying so.

It was in the social rooms occupying the entire second floor where the affair centered. These are reached by a separate doorway at the street level and a single stairway. From the landing, one steps into the middle room of three, a large one with seductive easy chairs everywhere, with library tables, low hanging lights, and walls of a soft, deep green. The corner near the door is taken up with the steward's counter, where cigars are supplied, and the registry book for visitors and others is kept. Opening forward from this room another large, square apartment, decorated in harmonious tints, serves as a drawing room. Its three large windows look out on Boylston Street, and its

large, open fireplace at the right invites to a cosy chat or discussion. The tables in both rooms are supplied with periodicals and the leading automobile journals and magazines, while on the walls are photographs or prints of famous automobiles, past and present, including the famous print of the original automobile stage-coach, which was inherited by the joint organization from the old Automobile Club of



Massachusetts Automobile Club's New Quarters

New England. The third room of the three is a handsome little apartment in red and white, fitted with small tables for four persons each, as the club café, a little narrower than the other rooms to allow space for a small kitchen at the same level. All the rooms are finished in hard wood and have hard wood floors.

On the ground floor the entire space is given up to the storage

of automobiles. The ceiling is of hard wood, the sides of plaster, and the floor of cement. There is room for fifteen carriages on each side with a broad aisle in the middle. At the rear is a large hydraulic elevator which will lower a carriage to the basement, for storage or repair; or by stopping half way between first floor and basement will allow an exit by special doorway to a narrow street in the rear of the house. If extensive repairs or machine work is needed, the carriage may be lifted straight to the third floor, where the rear third of the building is fitted as a perfect machine-shop, with lathe, drill, and other machinery operated by a small electric motor attached to the city service wires. In the machine-shop, too, is a large tank for compressed air, connected by pipes with front and rear of the main stable at street level, so that tires or carriage tanks may be filled with air in a trice. The front part of the third floor is designed as an assembly hall. The washing floor is in front of the elevator at street level; the pit is in the middle of the same floor, covered usually with a metal shield; and the gasoline storage is in a pit of solid concrete, covered with metal, in front of and outside the building, but just inside the line of the public sidewalk.

On the evening of the house-warming the first floor and basement were filled with automobiles, some of them fine examples of the builder's art. One of the most notable rigs was a yellow autocar just received by A. W. Stedman, president of the old New England club. Another was the big Robinson car and the two handsome electrics of Charles J. Glidden, the club member who toured through England and France in a Napier last summer. There were Packards, Wintons, Whites, and one or two Locomobiles and Mobiles.

There was nothing formal about the affair. The only semblance to a reception was that the officers were everywhere, so far as they were able, explaining this and calling attention to that, in order that the features of the club's new home might appear at their best. The new governing board represents the leaders in both the old clubs which, two months or more ago, united under the present name. The board consists of Colonel James T. Soutter, president; Eliot C. Lee, first vice-president; Dr. Joseph C. Stedman, second vice-president; Royal R. Sheldon, treasurer; Dr. F. L. D. Rust, secretary. The governors are A. W. Stedman, Charles J. Glidden, George E. McQuesten, Henry Howard, J. Ransom Bridge, Newton Crane, Ernest L. Rueter, and Dr. W. A. Rolfe.

Since the house-warming the club has been gradually getting

settled in the new quarters. A superintendent, in charge of the mechanical and storage department, has two assistants and keeps carriages and the entire building in order. The members take a good deal of satisfaction in the thought that theirs is the first specially-constructed automobile clubhouse in the country.

O. L. STEVENS.

Automobiles in Porto Rico

RECENT news from Porto Rico, where it is said some of the roads are eminently adapted for motoring, describes the advent of the first automobile in those parts as astonishing the natives to a point of speechless awe and wonder. Since its introduction there by Mr. Eisenbergh, four more machines of the same type (Locomobile) have been shipped to this same port at the order of Mr. Whipple.

It is stated that 150 or more, large, high-grade motors could easily be disposed of on the island, and this, coming from good authority, should at least command some deliberation on the part of manufacturers.



San Juan Military Bridge

One Of The Main Streets



A Typical Porto-Rican

For Sweet Charity's Sake

At present, transportation of the products of the soil is accomplished by carting and is thus expensive, so that producers would naturally welcome a line of automobiles for their use from San Juan to Ponce. And, as travel is now conducted there, the distance between these points requires 13 hours to cover it at an expense, per person, of \$6.00 for those journeying by mail-coach; therefore it is thought by our correspondent that the mail contract could also be obtained by some enterprising automobile firm who would profit quite largely thereby since, steamship connections being inadequate, several hundred people are daily obliged to travel by coach over this route. All rates of travel are exorbitant and average \$2.00 or \$3.00 per hour, according to the conditions of the roads or spirit of the driver, who overcharges according to his own sweet will, and the presumable inclination of the rider to be regarded as an "easy proposition" by the Jehu.

This first automobile importation has been tried over all the nearby routes by Captain Tyndall and Mr. Eisenbergh and they seem to have had no difficulty in overcoming all obstacles that have presented themselves so far; their next trip will be to Ponce by way of

the military road, which is 80 miles long and a fine highway without too steep grades for a motor to surmount readily. We shall hope to hear of the success of this trip by later communication.

A Chapter of Mishaps

By WILLIAM B. ROPER

A RECENT trip of mine had more mishaps to the mile—or hour would be better—than any I know of, and I would like to chronicle some of the events as they happened.

9 a. m.—Started for Fitchburg (from Worcester, Mass.) with 225 pounds of steam, everything going lovely.

9.15—Steam dropped to 75 pounds before I hardly knew it. Climbed out and found main burner out. Knew I'd filled gasoline tank—couldn't think what ailed it. Discovered that the automatic regulator didn't automat. Closed at 225 and didn't open again. Fixed it so it worked more freely, lit it and went on. Ten minutes lost and free amusement furnished about 8,000 people (more or less—probably less).

Everything went lovely through Barbers Crossing and Greendale, but at 9.45 couldn't see any water in gauge glass. Stopped, turned out fire and worked the auxiliary pump without any effect. Put a newspaper behind the glass and found it magnified the print, showing it was full of water. Was the boiler full also, or was one or both of the gauge-glass valves closed, preventing circulation in the glass? Forcing the valves open, the water level decides to establish itself about midway in the glass and all fears of a burnt boiler vanished. Five minutes gone—it is now 9.50.

Now comes a pull up to Summit, and as I start to drop down the other side the chain takes a notion that it needs a vacation and jumps a sprocket. Nice clean job putting it back, and of course there wasn't any waste to wipe my hands on.

10 a. m.—An hour from home—25 minutes of it spent "fixin' things," and a pair of dirty hands into the bargain. I wipe them on the grass as best I can and start again, after adjusting the stretcher or distance rod. Everything goes swimmingly, and I reach a house on

the outskirts of West Boylston, where I inveigle the good housewife into letting me into her kitchen to use hot water and strong soap to remove the effects of the chain's indisposition.

I renew my water supply at the trough in a shady spot between Cowee's mill (that was before the days of the great work on the Metropolitan reservoir) and Oakdale, and I suppose this was partly cause of my next mishap. I lifted out the top strainer to see how much water was in the tank, and in putting it back the strainer took a notion to have a Turkish bath and dropped into the tank. Water too hot to fish for it, and so I fill up without it as the water seems clear.

It's a beautiful ride along here and up over the hill past the Truant School, then down toward Sterling Junction, and I was so absorbed in the scenery that I didn't notice my water was gradually dropping. It was about 2 inches from the bottom when I did notice it. The by-pass valve was closed in a hurry and many anxious glances I gave it as we climbed the next hill. But it didn't gain—dropping slowly all the way up. Surely it would gain on the down grade when I wasn't using steam, but it didn't—going down instead. When the water said farewell to glass and sank out of sight, I stopped, climbed down and wondered what the matter could be.

Perhaps the pump was choked up or the check valves wouldn't hold—so I pumped up by hand and lo! the water waltzed up into the glass at an unheard-of rate. The auxiliary pump was doing double duty or I must be extra strong.

Lighting up my fire and feeling that this was an easy one, I was paralyzed to see the water disappear from the glass quicker than it came in. Out went the fire and another attack of hand pump brought it up into sight, but as a precaution I try the gauge-cocks and away goes the water again. A sudden inspiration revealed the fact that for some reason neither pump was getting any water. The water in the glass was simply what lay in the pipe between the pump and boiler. Working the pump simply forced air under water in the glass.

The pumps seemed all right so I concluded the tank-strainer must be stopped up—but how to get at it. The filling-hole was on the opposite side of the carriage (a brilliant idea on the part of the designer) and the water supply pipe chased itself into the tank in some mysterious way. Fortunately I was near a little machine-shop where the man in charge had evidently seen similar cases. In some way—I'll never tell how—he got at the strainer and cleaned it. Then he fished up the other strainer, and I was happy. It was nearly dinner

time so I found a place to eat and called it quits for the morning. Only ten miles toward Fitchburg, but with more experience than a man is often blessed with in such a short run. And not a puncture in the lot—perhaps I hadn't gone far enough. The remaining 17 miles were made without mishap, and I've been trying ever since to forget the first part.

A Boston Automobile Enthusiast

SUMMER along the beautiful north shore of the Bay State allows the fullest enjoyment of the sport of automobiling, and among those who were most enthusiastic in that form of recreation there last summer is Dr. Charles H. Parker, of New York city, who has a beautiful summer residence at Beverly, overlooking the entrance to Salem harbor. One of the features of the doctor's place is the large old-fashioned barn, for although its look suggests nothing but horses and cows, the traditional live-stock of a well-to-do farm, a chance visitor on a fine summer day would be more than likely to see nothing in the barn-yard but automobiles. And they would seem numerous. The AUTOMOBILE MAGAZINE correspondent found just this state of things when he happened down there one fine morning toward the end of the season, when the doctor was almost ready to take his departure for his winter residence. The three automobiles were all out in front, with the doctor's man, Fred Nagel, and a helper, at work on them; and they seemed strangely out of keeping with the old building and beautiful stretch of woodland beyond them.

A twelve-horse-power Gasmobile stanhope stood over a wooden "pit" which the owner has had constructed just outside the carriage house of the barn, for repair purposes; and in the middle of the yard was the big, two-seated Gasmobile surrey, which is a good American copy of the high-powered French type of automobile. It weighs two tons, has a four-cylinder, thirty-eight H. P. engine, and its four speeds are intended to be eight, twenty, forty and sixty miles per hour. But Dr. Parker has found it rather too much of a racer for use on roads where a horse-drawn equipage is likely to appear around a turn of the road at any moment without giving proper chance to turn out, and he prefers to go bowling around the country in the stanhope.

There was a third machine, however, a steam carriage, which is

of particular interest, because it was designed and built on the doctor's own place, by Nagel, his man. Its peculiarity was that it had its boiler and engine—not under the seat as in the common type of steam rig, but under a sloping sheet-iron hood, in front of the occupants, giving an appearance more like that of the big French gasoline cars of recent pattern. One might think this arrangement would fill one's nostrils with fumes from the burner, or cover one's clothes with oil from the engine, but neither is the case. An ingenious, scoop-like contrivance between the forward wheels provides a forced draught when the carriage is in motion, and carries all odor backward so swiftly that none is perceptible to the persons on the seat. When the



Dr. C. H. Parker's Automobiles at Beverly, Mass.

carriage is standing still, the vent is through the top of the hood—otherwise, it is through a tube at the level of the carriage floor. Both the doctor and his man have found it a great convenience to have the whole mechanism in front of them, where they may reach almost any part easily without stopping and dismounting. The supply tanks are under the seat, and the vehicle has an unusually long wheel-base.

Next year Dr. Parker intends building an addition to the front of his barn, specially designed for automobiles. He will also have a shelter over his repair pit, and separate stalls for each vehicle. He has already ordered an engine for a new gasoline carriage, which he plans to construct between now and the end of next season.

O. L. STEVENS.

A New Steam Carriage

THE carriage shown is one which has been designed throughout by an engineer of wide experience. The attention to detail proves this to anyone who is conversant with mechanical design and encourages a careful examination. In general appearance it is not very different from other steam carriages, as will be seen by the engraving, which also shows the designer, Mr. Thomas F. Flinn. As the engine is the vital part of any carriage, it may well receive first attention.

It is of the compound type, with cylinders $2\frac{1}{2}$ and $4\frac{1}{4}$ inches by 4-inch stroke, piston valves being used as indicated. Steam from boiler comes into the central "steam inlet" of high-pressure cylinder (see Fig. 1) and the exhaust goes out at ends and across to the low-pressure cylinder, where it is used again and then exhausted to the atmosphere. Fig. 2 gives a cross-section view of the cylinders and also of the intercepting valve, which is shown in detail in Fig. 3 and in different positions in Figs. 4 and 5. In a compound engine for automobile work it is necessary to be able to use live steam in both cylinders. The intercepting valve shown enables this to be done with very little complication and no trouble on the part of the operator. In starting the carriage, especially if there is a rut or grade to increase resistance, the intercepting valve is moved to "simple" position by the nearly horizontal handle near steering post. This turns it as shown in Fig. 5 and allows the live steam from boiler to flow from the high-pressure steam chest *HP* to the low-pressure steam chest *LP*, giving more power than a simple engine (owing to larger cylinder on one side) and starting with ease. In this position it gives both cylinders free exhaust to the atmosphere. As this takes more steam than running compound, the lever is moved to "compound" or running position as soon as the carriage is under way. This turns the intercepting valve to position indicated in Fig. 4, closing the high-pressure exhaust to the atmosphere and forcing it to the low-pressure cylinder. The engine weighs 75 pounds without lagging.

Compound engines have been a necessity in stationary work, are slowly but surely forcing their way into locomotive service, and there seems no reason why they shouldn't have a field in automobile con-

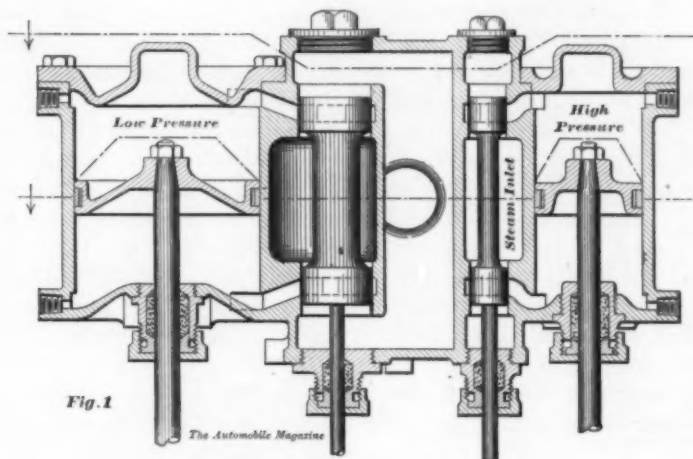
struction. True, they have disadvantages in the shape of first cost, added parts and more or less complication, but these have not been found a serious drawback in other fields, and the complications in this case are not serious enough to be objectionable. There should be a somewhat smaller consumption of water and fuel and the exhaust, being at a lower temperature, is less visible. Of course this is not the only carriage having a compound engine and many people will probably always prefer the regular machine, just as some railroads do not



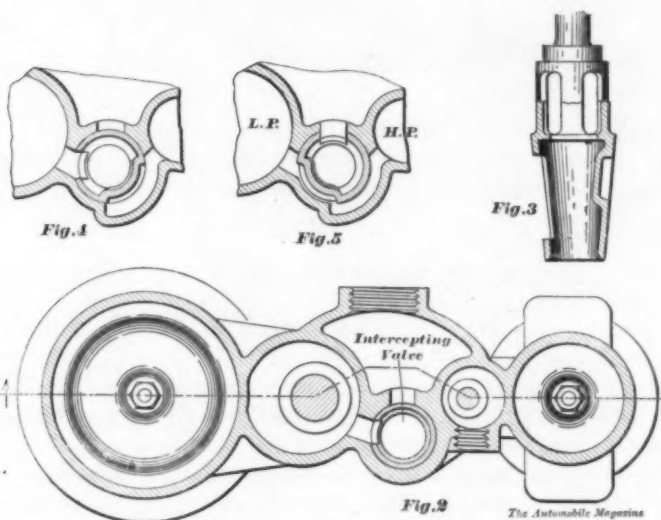
Mr. T. F. Flinn in his Steam Carriage

use compound locomotives, and the field being plenty wide enough for both.

The machine shown weighs 1200 pounds with 22 gallons of water and $4\frac{1}{4}$ gallons of oil. It has a wheel-base of 66 inches and has a 54 gauge. Tires are Dunlop and with 4-inch elliptical springs and hickory reaches, make a very easy riding carriage. This idea of hickory reaches, which was used and abandoned by some makers, seems to have been one of the features of the last French show.



Cylinders of Compound Engine



Details of Compound Engine, See Pages 163-4

The chain runs from a 10-tooth tempered sprocket to a 25-tooth on the rear axle and there is a band-brake on each side of the differential. This really places a brake on each half of the rear axle and makes a very safe arrangement. The brake is double-acting.

The boiler is of the water tube type, being known as the "climax" in stationary practice. It is entirely without rivets and the only bolts are in a hand-hole plate, to allow for cleaning and inspection. It supplies ample steam for the engine already described, even when used "simple" on heavy grades. A test of this was in towing a disabled carriage weighing 1200 pounds up the bad hill at Fort Lee, N. J. Mr. Flinn tells us that he averages nearly 12 miles per gallon of fuel and about two-thirds of a gallon of water per mile, which is very good for a machine of that weight.

Another interesting feature is that he burns either gasoline or kerosene in his burner, just as it happens and has no trouble with either.

This carriage is soon to be placed on the market by the New York Motor Vehicle Company of 26 Broadway, New York.

AMENDMENTS TO THE RACING RULES OF THE A.C. OF A.

RULE 53 has been amended to read as follows: "Once in the hands of the starter, no automobile shall receive any further care, except from its driver, or his assistant."

NEW RULES.

15a. In record races and contests, automobiles shall be classified according to weight.

15b. Bicycles, tricycles and tandems shall not compete against four-wheel vehicles.

63a. During the running of a contest or record race, the driver must have exclusive control of the steering and power of his automobile.

67a. No time shall be considered official unless the time is taken by an official of a "recognized meeting," or by one appointed subject to the approval of the racing committee.

An Auxiliary Throttle Valve

TO prevent steam automobiles running away, the Moran Flexible Steam Joint Company, of Louisville, Ky., has devised what it terms an anti-runaway valve, as shown in the illustration. It is placed between the throttle and the engine and may be closed by a light touch as the operator leaves the carriage. It is behind the seat apron and therefore is not apt to be disturbed by curious med-



Auxiliary Throttle

dlers. Its use gives a feeling of security when leaving a carriage on the street and is a safeguard that many will appreciate.

The Lehigh Valley Railroad has just issued an order prohibiting the shipping of automobiles with gasoline or naphtha in their tanks. Unless the tanks are empty they will not be accepted for transportation. Agents are requested to make a thorough examination and see that this rule is complied with.

As a protection from dust and cold the costume indicated by this accompanying cut scarcely needs comment other than to state that the interior, which is invisible by portraiture, comprises a detachable lining of fur for the winter season. It seems to be a sort of clever adaptation of pajamas and union suit, designed by Ström Bros., Chaussée-d'Antin, Paris. The head covering of Caucasian type, is most practically suited to its purpose of guarding the neck and serving as casque at the same time. At first sight it might be supposed that the wearer was fitting himself out, à la Esquimaux, for a trip to the North Pole, but it is merely an automobile costume of the latest Parisian design.

These same Scandinavian tailors

have ingeniously contrived an elaborate automobile creation for the furthering of comfort and elegance when Madame takes her constitutional in the park these frosty days. This mantle is fur-lined or silk, as desired, and is made from the whole skins of the skunk, the white lines on the backs of this little animal being thus used most cleverly to produce a rayed, black and white, alternating effect that is very artistic. Picturesque and dainty the model, as here reproduced from *La Locomotion*,—a striking contrast to the garb indicated for the gentleman; but no French woman would array herself without due consideration to the artistic side of comfort—if there was one.



Monsieur



Madame



(We desire those interested in both the manufacture and operation of Automobiles to send whatever they think may be of interest to our readers.—EDITORS.)

COAL VS. GASOLINE FOR AUTOMOBILE

I HAVE perused your magazine, including many of its back numbers, and have failed to find any article on why steam automobiles have for a fuel such a dangerous liquid as gasoline. Why cannot soft coal be used, thereby eliminating all risk of automobiles catching on fire, being destroyed and frightening people. Coal is used successfully in fire engines for generating enough power, not only for their pumps but also to propel themselves through streets. Why cannot the same principles be applied to pleasure automobiles?

LA PORTE, IND.

GEORGE K. POWER.

The main reasons for not using coal in pleasure automobiles is on account of the ensuing smoke and also because the steam generator would have to be of such ample proportions that its weight alone would be an absolute detriment to a vehicle built for pleasure purposes. Some steam delivery trucks are in use which use coal for fuel and are satisfactory, but it is not soft coal, for ordinances of any good sized city prohibit the use of any smoke-making article on the streets.

Another reason why coal cannot be used for pleasure automobiles is that not enough heat in proportion to weight and bulk can be obtained. The flame on a gasoline-burner with the fuel under pressure, such as is the case in the modern steam automobile, is virtually a "blow-pipe" variety, being about as hot as can be successfully handled in an apparatus which must stand as much knocking about as is given to the average automobile. Although the gasoline flame

is dangerous in the hands of those unacquainted with its correct methods of usage, it is well under control and comparatively harmless when supervised by one familiar with it.

EDISON'S NEW STORAGE BATTERY

Is there any way of getting technical statistics regarding the new iron-nickel electric storage battery invented by Thomas A. Edison? Is this battery being used commercially?

NEW YORK.

K. N. PHILLIPS.

While the AUTOMOBILE MAGAZINE is in a position to give an impartial opinion on the Edison iron-nickel battery, it is unfortunately impossible to give a verdict as to its merits at the present time for the reason that there are no data concerning the actual performance of the battery. All that is generally known has been taken from the description read before the American Institute of Electrical Engineers by Dr. Kennelly, last May, the salient features of which gave the weight per horse-power of stored energy, 53.3 pounds, as compared with a minimum of 125 pounds per horse-power for a lead battery. It was also intimated that the cell could be discharged much more rapidly without injury than the lead battery.

Continuing further, the ideas of F. Valdemar Henshaw, an electrical engineer are given, he furnishing this opinion exclusively to this magazine. "The construction of the plates is very strong, and mechanically the battery is infinitely superior to the lead one. On the other hand the voltage of the cell when first charged, is only $1\frac{1}{2}$ as against $2\frac{1}{2}$ of the lead battery, and its mean voltage during discharge is only about 1.1 volts as against nearly 2 of the lead battery. This means that a great many more cells are required for the same voltage and that while the new battery might be lighter than the old for equal power, it would probably be more bulky.

"There is no satisfactory data given as to the efficiency or life of the battery. A point which may be of considerable importance is the fact that the solution is caustic alkali, which cannot very well be exposed to the air, hence it may be necessary to seal the cells by means of a layer of oil over the surface.

"It will be seen from the above that the status of this battery is not proven, but I would add that I understand Mr. Edison is equipping a factory in New Jersey on an elaborate scale and building special machinery for making the battery plates. It is hardly to be supposed

that one so practical as Mr. Edison would go to this extent in preparing to manufacture a new device unless he had proved satisfactorily to himself and his associates that it were a success. It is quite certain that if this battery will do what is claimed for it, its owners would be wise in not attempting to put it on the market until they were prepared to fill orders on a large scale, inasmuch as the demand for it would be enormous.

"In regard to the novelty, I would say that probably every ordinary and many extraordinary metallic compounds have been experimented with in storage batteries, but hitherto I believe no one has succeeded in finding a compound of iron or of nickel that could be used as active material in a commercial battery. Curiously enough in Dr. Kennelly's paper it is intimated that nobody knows the precise chemical properties of the compounds in the Edison batteries. The mechanical construction of Mr. Edison's new battery is novel and very original."

GUARANTEES OF AUTOMOBILES

I AM credibly informed that the question of guarantees of automobiles was thoroughly discussed by the Executive Committee of the Automobile Manufacturers' Association, at a recent meeting, and that the members present took a most decided stand against liberal guarantees. A standard of uniform guarantee was resolved upon, and it was decided to only guarantee the vehicle at delivery, the same to be in good condition, first-class in workmanship and fully operative at such time.

That is a very comfortable move on the part of automobile makers, but it strikes an automobile owner and user as being too one sided. Experience inclines me to believe that, in doing this, the automobile makers insist on being favored by purchasers to an extent that no other manufacturer would dream of claiming. The automobile has not got far beyond the experimental stage, yet a great many manufacturers have been in the habit of requiring payments in advance, sufficient to pay the cost of building the machine and have been notoriously lax in time of delivering, and now they want to escape from the ordinary business proposition of giving a guarantee.

The number of broken-down and dead automobiles that are to be seen on any roadway frequented by automobiles is testimony to ignorance of designers and indifferent workmanship. In many in-

stances draughtsmen, whose experience has been almost entirely confined to bicycle work, are employed to design automobiles, and the result is a machine bristling with engineering flaws that make the life of the owner a burden to himself and the business of automobile making and operating a subject of public ridicule.

The automobile is improving, but the experience that helps the makers to turn out better work is nearly all obtained at the expense of automobile operators. A fair guarantee is the surest way to keep the manufacturers up to their work and purchasers ought to insist that a good time guarantee is given.

NEWARK, N. J.

A. CONVETH.

ROUTES FROM NEW YORK TO JERSEY TOWNS

THERE is one road through Jersey City to the Hudson County Boulevard, and it is the only possible way of riding over there on good roads.

Take either the 23d Street or Cortlandt Street Ferries of Pennsylvania Railroad to Exchange Place, Jersey City. One block up Exchange Place to Hudson Street, turn one block to York, turn right up York five blocks to Henderson, (Adams Express Building on the corner) turn right in Henderson two blocks to Mercer, turn left up Mercer about one mile to Hudson County Boulevard. Corner of Mercer and Henderson is City Hall. All of this route with the exception of Exchange Place and Hudson Street is asphalt. When they reach the Hudson County Boulevard, automobilists are often confused. By turning to the left 10 blocks the Newark Plank Road is reached which is very badly paved more than two-thirds of the way, and leads to the lower part of Newark in which the roads are in very bad condition. Turning to the right when you reach the Boulevard eight blocks, you reach West Newark Avenue which is the continuation of the Old Turnpike, and which is in very bad condition. When the weather is wet the road is covered with 2 or 3 inches of mud, if it is dry the dust is stifling; then you have the pleasure of riding alongside of great manure piles.

I would suggest if one desires to reach Plainfield or Morristown, or go to Philadelphia or down the coast to Long Branch, turn to the left on the Hudson County Boulevard, seven miles to the Bergen Point Ferry, and cross to Port Richmond. Ferry runs every 15 minutes. After crossing the ferry turn right and follow the shore

road about $2\frac{1}{2}$ miles (you cannot make any mistake) and this will bring you to the Elizabethport Ferry. Cross this and you will have about 8 to 10 blocks of stone pavement that is very good, and will bring you to the macadamized system of Union County.

This is the shortest route from New York City to Plainfield, Morristown or Philadelphia or down coast districts, that is if you go by Jersey City.

Another route, which is the shortest way possible for automobilists to go to Philadelphia on the Jersey shore, is to take the ferry to St. George, S. I., Amboy road to Tottenville, Perth Amboy direct to Metuchen, New Brunswick, or Philadelphia, or continuing along the Metuchen road to the Jersey shore, you turn left and go south *via* Old Bridge to Matteawan; the route for Staten Island is beautifully paved, every foot of it, if the driver will only keep to the main boulevard, which is well marked with sign-boards. To reach the northern part of the State, or go to Hackensack, Paterson or Passaic and avoid the Newark Meadows, it is necessary to turn right when you reach the Boulevard at Mercer Street and follow the Boulevard north and down Kelley's Hill, taking Richfield road to Hackensack Turnpike, or Little Ferry; all roads in good condition.

JERSEY CITY, N. J.

FRANK EVELAND.

HAVING BRAKES EXAMINED

I am a crank (perhaps) on the question of brakes and before taking my carriage out next spring—too cold now—I shall have the brakes thoroughly overhauled. My present brakes do not hold backwards as well as they should and I have about decided to order a pair of the double-acting kind advertised in your last issue.

I shall leave the old brake on the differential and put the new ones on the hub of each rear wheel. I've never had any special trouble, although carriage did start to back down a bad hill once, but I believe in prevention of accidents even at the expense of getting even with the insurance company. If any of my friends haven't thought of looking after their brakes before another season, I'd advise them to put it down on their memory pad at once.

ALBANY, N. Y.

R. G. WILLIAMS.

Through the Great San Joaquin in a Locomobile

By L. H. JOHNSON

AT early morn I unhooked "Polly" and steamed gently away from the Locomobile station in San Francisco, down Market Street to Oakland Ferry. Matsu, the Japanese "hostler," had done his prettiest and the machine sparkled from rim to rail. My impedimenta was stowed in a hamper back of the seat. I carried an extra gasoline tank, giving a 10 gallon total capacity, but started with about a quart, as Senator Platt had not yet passed his national ferry automobile bill. The trip over the asphalt to Second Street was soon accomplished, then we swung into the cable car rails and quickly reached the Creek boat. Turning out the fire, and blowing off the remaining gasoline, I still had steam to run up the bridge and on the boat.

At Oakland, my friend H. met me with 10 gallons of fuel in his Locosurrey, and I was quickly spinning down the Fruitvale road, reverser hooked back to full cut-off and "Polly" purring like a contented kitten. Below Fruitvale, we reached the celebrated Haywards road, and taking water at San Leandro, went at 25 miles an hour through almond orchards laden with their pink and white fragrance, pulling up at the Haywards villa long before dinner. At 2 o'clock we climbed the Haywards hill bound for Livermore 22 miles away. The best road lay through the Dublin Canyon, but on reaching the fork, I found it torn up with new and unbridged culverts, while masses of rock seemed to be flying through the air from incessant blasting. The alternative was by San Ramon and on that self-same road "Polly" and I had our first experience with that Western abomination "adobe." Hell is doubtless paved, not with good intentions but with "adobe," and it will be the punishment of wealthy and unpatriotic "chauffeurs" to spin their driving wheels and cover themselves with the semi-liquid glue, which takes off varnish like lye and ruins clothes.

Finally sliding down a 25 per cent. grade hill into the little village of San Ramon, brake on hard and occasionally cushioning a little on air, I gave "Polly" a good long drink and started over a good road 6 miles to Dublin. This was an exhilarating little bit, covered in 19 minutes. The wheels had been packed solid with "adobe,"

but soon cleared themselves. It was a perfect afternoon. Mount Diablo, solitary and majestic, loomed 4,400 feet high on my left. Ahead, the Livermore hills, 2,000 feet high, were covered with snow on their north side, turning from white to pink, and from pink to crimson as the sun went down. The fields and meadows were clothed in the tender green of early Spring. Larks sang and the harsh, whippoorwill cry of the valley quail rang through the evening stillness. It was a cool ride, so that the great log fireplace of mine host in Dublin seemed very snug as I sat toasting my feet and sipping "something



J. Dunbar Wright and Henri Fournier in latter's Car at the end of 2 fast miles

hot," while supper was preparing. "Polly" stood patiently under the horse shed, her warm heart stilled and her life gradually ebbing away, to be revived by poking a hot iron into her vitals in a most cruel manner! I can now understand the affection a locomotive engineer feels for his engine, for the many weary miles of atrocious "adobe" mud, ruts, lumps rougher than cobble stones and deep sand that my Locomobile has covered uncomplainingly, without a loose nut or a broken spoke, has endeared her to me, and it is hard to

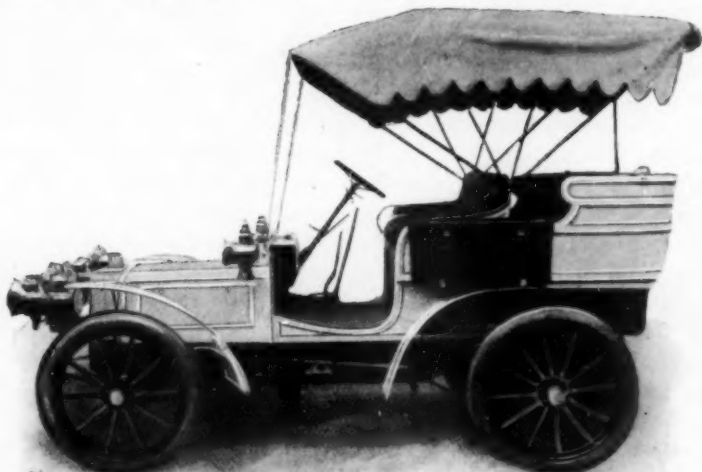
steam her up after a long day's run and drive her another 20 or 30 miles by lamplight.

I made the run from Dublin to Livermore, 11 miles, in three-quarters of an hour, every mud hole, stone and rut showing like daylight in the powerful rays of "Polly's" two Solar acetylene lamps. Free wrinkle to automobilists: Bore a hole three-eighths of an inch in diameter in your right-hand lamp, in such a position that a direct ray from the flame will strike your water glass. Snap off the shield, put it in your pocket and there you are!

Bowling along over the graveled road, an unsteady individual shows up in the glare of our lamps. I pull up to ask him the distance to Livermore. He informs me correctly in thick tones and adds that "Blest if I did not think I had 'em sure" when he saw those two great stars and heard "Polly's" low exhaust. At Livermore I met my old friend C——, ran "Polly" into the livery stable, backed her around on the washing-rack, stripped her for a thorough drenching (the only way to get "adobe" off) and was soon in bed.

Livermore is a pretty town of twelve hundred population, located in a broad valley and containing a large number of beautifully smooth roads. Over these I put "Polly" through her best paces, occasionally driving her through a creek (turn your water glass shield sideways to avoid breaking the glass) or out to the foot-hills to demonstrate her ability to climb a thirty per cent. grade. It rained on Wednesday and Thursday, but Friday noon found us with our faces turned towards the east, good-byes were spoken and we steamed briskly out for Tracy, 22 miles away. The road was good for 6 miles, then began to ascend, winding over the treeless hills, where appeared hard, rough "adobe," with deep ruts, over one of which I would straddle "Polly" when possible. Dinner and water at Altamont and after four miles of more climbing, the summit was reached and a vast inland sea of young wheat lay spread out before me. In the great San Joaquin Valley, which comprises the lower half of the central plain of California, there is abundant room for New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut and the half of Maine. Think of that, ye self-satisfied Bostonians! Southward through this great plain was to be our pilgrimage and it was rather exasperating to be introduced at once to a long run of swampy adobe, which, however, finally gave way to gravel as we approached Tracy. A stop in that thrifty little railway town to "wet up" ("Polly" of course! what an insatiate thirst she has, as if a fever were raging in her vitals!) and then east

to Banta and finally south on the long journey. The road improves and for the last ten miles was like a floor, only billowy, giving a most exhilarating motion as we flew over it at a three-minute clip. Finally about supper time, a small tavern, a barn opposite, and one other building showed that we had reached the metropolis which staggers under the name of San Joaquin City. It was small but "all there." "Polly" was run in the barn, where I shortly blew her off in the immediate neighborhood of the most sensible young mare I ever saw. 'Mid clouds of steam and the hoarse roar of the blow-off valve, she simply looked around curiously, then went on munching her barley.



Rochet-Schneider Car with Canopy

I think I ate more fricasseed chicken and stewed California figs that night than ever before at one sitting. Afterwards, while on the stoop, an occasional mosquito tried to remind me of my New Jersey origin, but the California article is such a dispirited thing compared to his eastern, or Alaskan relative, that he cuts no figure as a nuisance.

The Reverend Mr. F—— was on his way back to Tracy, after conducting a country funeral. He gave such horrible accounts of the bottomless pit, as exemplified in the river road below us, that I circled around over the wheat ranches next morning, sometimes striking a two or three mile stretch of lovely gravel surface, where I would "let her out" till she flew like a frightened jack rabbit, but I could

not get her steam below 140 pounds. "Polly" cuts her fire down to 195 and makes to 210, where she holds. I have screwed the safety-valve to lift at 240, so she never pops and scares horses. Wrinkle No. 2 for Locomobubblers :—If your steam runs down to 100 pounds, and your fire shows yellow, tinged with red points of soot in the burner, get a stiff, round cycle chain-brush, put it on a slim handle and thoroughly brush out your burner through the lighting-hole. Then put your foot-pump tube in the burner-tube without the screw connection, pack around it with wet waste and blow the particles of carbon out of the little burner-holes. That works just as well as to take off your burner.

Running down to Westley, the road degenerated into a swamp for two miles, so I gave "Polly" steam on full stroke, opened her up and bowled merrily along over the young wheat. If there had been any fences, I think we would have jumped them! Water at the railroad station, then after a detour at Grayson, I found a good road to Crow's Landing; a short stop for lunch, then on toward Newman and a good hotel. I had driven so far 210 miles without causing a runaway or being delayed more than a few seconds, some of these cases being nervous horses. The Locomobile will not compare with the pioneer bicycle as a horse-scarer, and it is not the Locomobile, but the steam that generally startles them. At Newman a heavy rain set in, lasting for several days and converting the level plain into a sea, so I laid off and waited for things to drain a little.

It rained so hard and persistently, even drizzling when the sun shone, that when the "dry" north wind set in, I turned my back on the "adobe" country and pulled out for the east side of the San Joaquin river, or sea, as it should have been called at that time. The main road to Crow's Landing, over which "Polly" had bowled merrily a few days before, was a nasty swamp, pull, tug, slip, devouring steam by the mouthful. A mile from the bridge we nearly got mired, but I opened her up and she ploughed bravely through mud up to the hubs. Presto! we were on a magnificent gravelled road. Running at a 2.30 clip soon brought us to the great draw-bridge. This beautiful surface was part of the aforesaid swamp on which a few cart-loads of gravel from the river-bed had been spread. Crossing the bridge a little "faster than a walk," "Polly" struck out bravely over the treeless plain for Modesto, 17 miles away. In front of us were the giant Sierras, towering 15,000 feet, their summits snow-capped. The road, which started off with a pretty hard surface

soon began to show stretches of deep sand, in which poor "Polly" struggled, till in a particularly bad place with throttle opened far, her sharp musical cut-off suddenly changed to the watery roar of a priming boiler. This would never do, so out we get, dump a handful of soda in the tank, pump her up and start in once more. The medicine worked and she soon settled down to her old gait, landing me in Modesto by supper time in fine feather. The condition of the roads can be imagined from the fact that she burned five gallons of gasoline in covering the afternoon's run of 25 miles, and nearly three tanks of water. But not a screw was loose; no change but a big stretch in the chain, proving the terrific strain she had undergone. The only bit of jealousy was shown by a man in charge of the trotting-track at Modesto, around which "Polly" skimmed in 2.26, the surface being in poor condition. This party said we might get into trouble by scaring a six thousand dollar horse, corralled somewhere in the neighborhood, making him run up against a barbed wire fence, to which I promptly retorted that the owner had no business corraling such a jewel in a barbed wire fence.

Leaving Modesto, Merced was passed, and at 5.30 p. m. Madera was reached. At 7.30 the 25 miles to Fresno were commenced and we arrived at 9.15. We spent four days in Fresno in a most enjoyable manner, to which a first-class hotel greatly contributed. Asphalt pavements in town and fairly good country roads enabled me to exhibit the Locomobile's paces admirably and everybody was enthusiastic over her running. We steamed out to the new eight lap bicycle track, but were not allowed on it, although I am sure that "Polly" would have taken its forty-five degree banked ends perfectly. Then we went to the old three lap of earth, but it was so seamed and gullied by the rains that speed was out of the question.

Leaving Fresno and passing through a number of towns, we crossed the Kern River, swollen with snow water, and as the mountains closed in around us on the south, drew up in Bakersfield 128 miles from Fresno, in exactly 8 hours and 15 minutes running time, an average pace of a little better than 15 miles an hour. "Polly" had traversed the great San Joaquin valley from top to bottom, steaming every inch of the way, except over the "Chowchilla" trestle, had covered 384 miles straightaway in 6 days running time and had steamed 219 miles additional while in the different towns. She finished in practically as perfect condition as when she started, and had no adjustment, repacking or repairs of the slightest description during

the entire trip, except to brush out her burner and one "take up" of the stretch to the driving chain. The railroad fare from San Francisco to Bakersfield is \$9.10. It cost me \$5.76 for gasoline, the only expense, and I had no dust, smoke, cinders, or even train boys to annoy me.



Bernard M. Baruch, in his 12 H. P. Panhard

The representative of the Standard Oil Company at Malta has just obtained from the local government a concession to erect a building for the storage of gasoline. The importation of gasoline had previously been prohibited. There is already a demand for gasoline carriages on the Island, for carrying both passengers and freight. Automobile makers wishing to do business in Malta ought to communicate with Mr. John H. Grout, American Consul, Valetta, Malta.

Automobile Club Directory

Under this heading we shall keep a record of the motor vehicle clubs both of this and other countries, and we hope to have the co-operation of club officers in making it accurate and complete.

*Corresponding clubs of the Automobile Club of America are designated thus *.*

Automobile Club of America, S. M. Butler, Secretary, 753 Fifth Ave., New York; representative on International Racing Board, Clarence Gray Dinsmore; Substitute, John H. Flagler.

Automobile Club of Bridgeport, Secretary, Frank W. Bolande, 208 Barnum Avenue, Bridgeport, Conn.

Automobile Club of California, Secretary, R. R. l'Hommedieu, 415 Montgomery St., San Francisco.

Automobile Club of Cincinnati, O., Secretary, Rutherford H. Cox, 30 West Seventh Street, Cincinnati.

*Automobile Club of Columbus, O., C. M. Chittenden, Secretary, Broad Street.

Automobile Club of Hudson Co., Secretary-Treasurer, Frank Eveland, 52 Madison Ave., N. Y.

Automobile Club of Maryland, Secretary, C. W. Stork, care Hotel Altamont, Eutaw Place.

Automobile Club of New England, Secretary, Geo. E. McQuesten, Brookline, Mass.

Automobile Club of New Jersey, Secretary, W. J. Stewart, 8 Central Ave., Newark, N. J.

*Automobile Club of Rochester, Frederick Sager, Secretary, 66 East Avenue, Rochester, N. Y.

Automobile Club of Springfield, Mass., Stephen P. Perkins, Secretary.

Automobile Club of Syracuse, Syracuse, N. Y.; Secretary Frederick H. Elliott, 515 S. A. & K. Building, Syracuse.

*Buffalo Automobile Club, Secretary, Ellicott Evans, The Lenox, Buffalo, N. Y.

Chicago Automobile Club, Secretary, H. M. Brinkerhoff, Monadnock Block, Chicago.

*Cleveland Automobile Club, L. H. Rogers, 357 Amesbury Avenue, Secretary, Cleveland, O.

Columbia College Automobile Club, Lewis Iselin, Secretary, Columbia College, New York, N. Y.

Indiana Automobile Club, Indianapolis, Ind. Secretary, August Kabich.

Long Island Automobile Club, Secretary, L. A. Hopkins, 1190 Fulton Street, Brooklyn.

Massachusetts Automobile Club, President, J. Ransome Bridge; Treasurer, Conrad J. Rueter; Secretary, L. E. Knott, 16 Ashburton Place, Boston, Mass.

*North Jersey Automobile Club, E. T. Bell, Jr., Secretary, Paterson, N. J. Pennsylvania Automobile Club, Secretary, Henry J. Johnson, 138 No. Broad Street, Philadelphia.

*Philadelphia Automobile Club, Frank C. Lewin, Secretary, 250 No. Broad Street, Philadelphia, Pa.

Princeton University Automobile Club, Princeton, N. J. President, P. Adamson; Secretary, Charles H. Dugro.

Rhode Island Automobile Club, Secretary, Frederick C. Fletcher, P. O. Box 1314, Providence, R. I.

San Francisco Automobile Club, B. L. Ryder, Secretary, San Francisco, Cal.

Worcester Automobile Club, Worcester, Mass., President, J. W. Bigelow; Vice-President, Edwin Brown; Marshal, W. J. H. Nourse; Treasurer, B. A. Robinson; Secretary, H. E. Shiland.

AUSTRIA.

Budapest—Magyar Automobil Club, 31 Museum Körül.

Innesbruck—Tirols Automobil Club, Rudolph-Strasse 3.

Prague—Prager Automobil Club.

BELGIUM.

Antwerp—Automobile Club Anversois, 34 r. Longue de l'Hopital; Président, Baron de Bieberstein.

*Brussels—Automobile Club de Belgique, 14 Pl. Royale; Moto-Club de Belgique, 152 Boul. du Nord; Touring Club de Belgique, 11 r. des Vauniers.

Charleroi—Automobile Club de Charleroi, 18 Quai de Brabant, Charleroi.

Ghent—Automobile Club de Flandres, 7 Place d'Armes, Gand.

Liege—Automobile Club, Liegeois, 2 r. Hamal.

FRANCE.

Amiens—Automobile Club de Picardie, 36 r. de La Hotoie.

Avignon—Automobile Club d'Avignon.

Bordeaux—L'Automobile Bordelais.

Dijon—Automobile Club, Bourguignons Café Americaine.

Lyon—Bicycle et Automobile Club de Lyon; Motor Club de Lyon, 3 pl. de la Bouise.

Marseilles—Automobile Club de Marseilles, 61 r. St. Fereol.

Nance—Automobile Club, Lorrain, Thiers pl.

Nice—Automobile Vélo, Club de Nice, 16 r. Chauvain.

*Paris—Automobile Club of France, 6 pl. de la Concorde; Motr-Club de France; Touring Club de France, 5 r. Coq-Héron.

Pau—Automobile Club, Bearnais Ave. de la Pau, President, M. W. K. Thorn.

Périgueux—Véloc Club, Périgourdin, Hôtel de Commerce.

Toulouse—Automobile Club, Toulousein Café Riche, pl. St. Etienne Société des Chauffeurs du Midi, 23 r. Roquelaine. President, M. Gay.

GERMANY.

Aachen (Aix la Chapelle)—Westdeutscher Automobile Club, Hotel Grand Monarque.

Berlin—Mitteleuropaischer Motor Wagen Verein, I. Universitatstrasse, Herr A. Klose.

*Deutscher Automobil Club, Luis-

enstrasse, 43-44. President, S. D. Herzog, Victor von Ratilin.

Dresden—Radfahrer-und Automobilisten Vereinigung; Dresdener Touren Club.

Eisenach—Mitteldeutscher Automobil Club; Motorfahrer Club, Eisenach.

Frankfort am Main—Frankfurter Automobil Club, Restaurant Kaiserhof.

Munich—Bayer. Automobil Club, 33 Findling Strasse.

Stettin—Erster Stettiner Bicycle und Automobil Club.

Strassburg—Strassburger Automobil Club.

Stuttgart—Suddeutscher Automobil Club; Wurtembergischer Motor Wagen Verein.

GREAT BRITAIN.

Birmingham—Motor and Cycle Trades Club, Corporation street.

Edinburgh—Scottish Automobile Club.

Liverpool—Liverpool Self-propelled Traffic Association, Colquitt street. Secretary, E. Shrapnell Smith.

*London—Automobile Club of Great Britain and Ireland, 4 Whitehall Court, S. W. Hon. Secretary, C. Harrington Moore.

Nottingham Automobile Club, Secretary, A. R. Atkey, Nottingham, England.

HOLLAND.

Nimègue—Nederlandsche Automobile Club. President, M. J.-P. Baekx.

ITALY.

Milan—Club Automobilisti Italiani, 14, Villa Vivaio.

*Turin—Automobile Club d'Italie Via Vittorio Amedeo II, 26.

RUSSIA.

Moscow—Moskauer Automobile Club, Petrowka, Hauschnow.

St. Petersburg—Automobile Club de Russe, President, M. Delorme.

SPAIN.

Madrid—Automobile Club de Madrid.

SWITZERLAND.

*Geneva—Automobile Club de Suisse, Rue de Hesse, 2, Geneva.

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Threats to Impair the Rights of Automobilists

THE legislature of New York State which lately assembled in Albany, N. Y., is largely composed of rustic members, and reports say they are stirred to the depths of their being to do something that will put their individual names in the newspapers. Quite a number of them are reported to intend courting fame by introducing measures to embarrass and annoy the owners of automobiles. They seem to believe that automobilists have few friends and little influence, and that their rights can be abridged and their comfort disturbed with impunity. No doubt some of the rabid anti-automobilists expect that their opposition to horseless vehicles may be bought off in some way.

It is the duty of all automobilists who may find it convenient to travel with their automobiles in New York State to organize without

delay for self-defence. Everybody interested in automobiles, manufacturers and owners, ought to wage a vigorous fight. The tactics should be as aggressive as possible. The entire influence of organizations and individuals interested should be directed against the people who are trying to interfere with their rights and privileges. The differences between the manufacturers and the clubs ought to be suppressed to face harmoniously a common danger. If this course is followed the hayseed legislators who supposed that they could attack automobile interests with glory to themselves, will wish they had never heard about a horseless carriage.

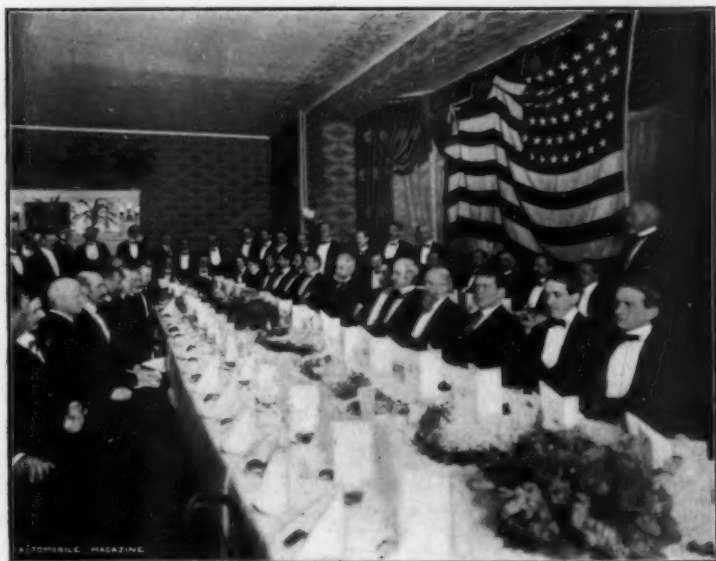
Rhode Island Automobile Club Banquet

THE first annual banquet of this club was held at Crown's hotel, Providence, Wednesday evening, January 8. The club has appropriate quarters on the second floor of this new hostelry. Before the banquet commenced, the annual meeting for the election of officers and the transaction of other business was held. The election resulted as follows: President, Dr. Julian A. Chase, Pawtucket; first vice-president, H. A. DuVillard; second vice-president, James E. Blake; treasurer, R. Lincoln Lippitt; secretary, H. H. Rice; assistant secretary, B. S. Clark; consulting engineer, Joseph H. Manton; governors to serve until 1905, Charles O. Read and F. C. Fletcher.

There was a distinctly automobile flavor to the dinner, one of the courses being "Fournier Frappé," Dr. Chase, the president, who also acted as a toastmaster, started the speaking by telling the seventy-five diners what the club had endeavored to do since its organization a little over a year ago. He then introduced Winthrop E. Scarritt, a member of the board of governors of the Automobile Club of America, and member of the committee for holding the endurance contest which the club completed so successfully last fall. Mr. Scarritt spoke on the "Pains and Pleasures of Automobiling." His listeners, judging by their actions, were thoroughly interested, he completely owning the floor, as evidenced by the rapt silence in the audience, except at times when he forced those present to show emphatic recognition of some of his amusing comparisons and stories. The speaker called attention to the fact that automobiling in its present experimental stage in this country had just as many pains as pleasures, and *vice versa*.

He said he was the owner of three machines at present and each one was for sale. No one had the temerity to ask him if they would be for sale if he could not buy new ones. He frankly admitted that he had the reputation of being a pessimist on the subject, he giving a merry twinkle of the eye at the same time, which could not fail to be interpreted as a sign that he was a great enthusiast.

Mr. Scarritt told a story to show that notwithstanding the unreliability of automobiles and the pains and perils incident to operating them, we all want one. His words were : " A priest had as his special



Rhode Island A. C. Banquet

ward a young man who had been greatly endowed by nature physically and mentally. He showed unusual promise in appreciating what his education for priesthood meant. The priest and his ward one day in walking came across a party of young women bathing at the seashore, and the priest saw his chance to forcibly instil some ideas into the young man's mind which were absolutely necessary for the strict fulfillment of future duties. The priest commenced, 'Son, you see yonder women ; beware of them. As Kingsley so well says, women first opened the gates to Hell, and to this day they are the portresses

thereof. You are to take the vows of celibacy, and therefore you are to ignore forever and cease thinking of yonder creatures except in the way of doing them spiritual good. You must remember that they are sent here by Satan to ensnare promising disciples like yourself, enticing them from the strict path of duty.' The priest thought he had concluded an argument which found strong root in the young man's soul, but the latter answered, 'Father, I realize your words are true, but'—and the young man hesitated—'but,' he continued, 'I want one.' " "That," Mr. Scarritt concluded, "is our attitude towards automobiles."

H. Anthony Dyer, son of ex-Governor Dyer of Rhode Island, told about his automobile touring in France, giving ludicrous experiences of how he developed his pushing abilities, for, as he said, he had to do the part very often which should have been done by the motor. The strain on his piety also had been at unusual tension, but still it had not broken. His conclusions were that automobiling with all its present drawbacks was too fascinating to keep one who is familiar with all its bad and good points away from it.

E. P. Mason spoke on the manufacturing side of the subject, going into complete and interesting details of little things that cause users to lay up on country roads for indefinite periods, breaking up tours and causing general dissatisfaction. It could be plainly seen that if autoists meeting the machine derangements mentioned by Mr. Mason were familiar with constructional features, the ensuing delays would be counted by minutes instead of hours.

R. Lincoln Lippitt gave some of his American experiences in touring, telling in a laughable way how he had accidentally run over a dog's foot on account of the animal running out, barking and not being able to stop himself before the automobile was on him. The dog seemed so badly hurt judging from his pitiable cries that Mr. Lippitt stopped and went back to the house where the dog had retreated. Mr. Lippitt said that after arriving at the scene of action, he was sorry his spirit of humanity had gotten the better of his judgment, for he, not being a man of ponderous avoirdupois, was confronted at the front door by an individual who seemed at that moment to be at least seven feet high and built in proportion, wearing big leather hip boots and a rough flannel shirt that looked as though it would protect the wearer and itself even if a ton of coal fell on it. Mr. Lippitt could not then retreat and commenced, with trembling knees, an apology which called forth his best efforts at eloquence

combined with personal grief and humiliation, when the stranger interrupted with : " See here, you needn't give me any of that kind of chin music. I wish you had put him clean out of business, for he ain't worth powder to blow him to —." Mr. Lippitt says that for some unaccountable reason his knees immediately stopped shaking, and he departed showing an air that if a bout at fisticuffs or collar-and-elbow work had been necessary it was something he would have relished.

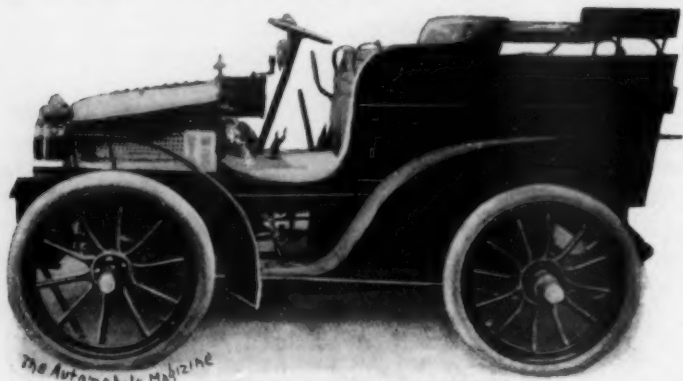
The editor of this magazine answered the toast of " The Technical Press in Automobiling," and endeavored to show that one of the duties of the press was to spread the idea that automobiles were not simple, fool-proof, etc., but that successful usage of them was closely allied with good mechanical knowledge of their construction.

The Automobile Club of Bridgeport, Conn., has decided to establish its headquarters at the new premises opened by the Park City Automobile Company, at 150 Cannon Street. This is both a storage and repair station. Its proprietor, J. M. Buckley, is a member of the club. At a recent meeting it was decided to accept the proposition of the Automobile Club of America to become affiliated with it on the plan which the parent club submitted, a full description of which can be found on the editorial page of this issue of the AUTOMOBILE MAGAZINE. The officers of the club are : Jonathan Godfrey, president ; Louis Cassier, vice-president ; Frank W. Bolande, secretary ; J. B. Cornwall, treasurer.

At a meeting of the Board of Directors of the Locomobile Company, the following officers were elected : President, Samuel T. Davis, Jr. ; Treasurer, Thomas H. Thomas ; Secretary, John F. Havemeyer.

The Foreign Show

THERE seems to be no dissenting opinion in pronouncing the French Automobile Exposition of the year 1901, in Paris, an unprecedented success, demonstrating the motor car of the present day as an ultimate universal factor of locomotion, and a perfected piece of mechanism as to finality of construction in its general principles. Accessories alone still demand the attention of the inventor and when they shall have attained the same standards as the rest of the carriage many a convert will be gained to automobiling who even now hesitates at the thought of the annual bill for repairs.



Jenatzy Petrol and Electric Carriage

From the opening day until the closing one the public thronged from all points of the compass, wending from booth to booth, querying, observing, remarking, not always intelligently, not all connoisseurs, yet carrying away with them a conviction of the magnitude of the movement and its serious purpose (also countless circulars and souvenirs that bulged their pockets beyond repair) which is impelled by a force against which no current of adverse opinion can combat.

Perhaps our French confrere, M. Baudry de Saunier, in attributing a large share of the success of the Salon to the opposition of the dailies which have exaggeratedly opposed and persecuted the new locomotion, is not altogether wrong in his deductions ; at least they are logical enough to quote : (*Translated.*)

"Since the world was, persecution has had no other effect than to infuse new vitality into the very innovations it aimed to stifle. Without going back to the deluge, which was intended, according to sacred writ, to punish the vices of the few mortals who then wandered



The Bollée Tonneau

on our planet,—but which only resulted in rendering the earth all the more fertile to nourish an innumerable populace of mankind even more vicious than their remote ancestors,—or without even reverting to the Christian period which was nourished and strengthened by the

blood of its martyrs, we may note that here in our day, the most effectual method of creating interest in a play is to forbid its production, and to increase the sale of a book it is but necessary to hale the author into the court of assizes.

"The motor may not pose as an exception to this rule. And, assuredly our enemies rendered us good service when they declared war on us, stigmatizing us as a race of murderers and imposing on us these disgraceful great numerals. From all sides, those who would otherwise have been indifferent have hastened to gaze on this display of the wheeled assassins, crowding to see the huge engines of crime that have been exploited in the records (Paris-Bordeaux, Paris-Berlin, hill-climbing contest of Gaillon, etc.) and verily: even the women went into ecstasies before the seductive vehicles, while more than one person who entered with vindictive spirit went away won over to the side of the assassin.

"Blessings, then, on our spiteful brothers, for having benefitted us so much by sending the multitude of sight-seers. Thanks to them the automobile idea has wonderfully developed in the minds of the public and drawn new strength from the combat."

A few years hence we may hear our children conning their arithmetics after this fashion: "If two motors sow two fields of grain in two hours, how many . . . etc., etc." A description of the mechanical features of the French Show may be found beginning with page 103.

A. L.

Long Tour of a Toledo

THE Toledo steam carriage which the International Motor Car Co.—the new organization that has taken over the motor vehicle business of the American Bicycle Co.—is sending overland from Toledo to Hot Springs, Ark., 1500 miles, as a test of its capabilities, is shown here. It is one of the standard style B machines of the Toledo factory, except that the gasoline tank has been increased from 9 to 13 gallons capacity. Following is the itinerary of the trip:

First Section—Toledo, Perrysburg, Roachton, Hull Prairie, Has-



Toledo Ready for Long Tour

kins, Tontogany, Weston, Milton, Custar, Deshler, Belmore, Leipsic, Ottawa, Columbus Grove, Cairo, Lima, Cridersville, Wapakoneta, Botkins, Anna, Swanders, Sidney, Kirkwood, Piqua, Troy, Tippecanoe, Tadmire, Johnsons, Dayton, Miamisburg, Carlisle, Post Town, Middletown, Trenton, Overpeck, Oxford, Woods, Hamilton, Jones, Glendale, Wyoming, Carthage, North Side, Cincinnati.

Second Section—Cincinnati, Ludlow, Anderson's Ferry, St. Joseph, Delhi, Home City, Fernhaut, Addyston, Sekitan and Northend, Ohio; Lawrenceburg, Aurora, Rising Sun, Norths, Patriot,

Florence, Markland, Vevay, Lamb, Brooksbury, North Madison, Madison, New London, Harnell, Marble Hill, Bethlehem, Owen, Strelman, Utica, and Jefferson, Indiana, and Louisville, Ky.

Third Section—Louisville, Pleasure Ridge Park, West Point, Tip Top, Vine Grove, Cecilia, Long Grove, East View, Big Clifty, Greyson Springs, Leitchfield, Millwood, Caneyville, Spring Lick, Horse Branch, Beaver Dam, Rockport, Central City, Greenville, Nortonville, St. Charles, Dawson, Scottsburg, Princeton, Dulaney, Eddyville, Kuttawa, Grand Rivers, Calvert City, Stiles, Paducah, Boaz, Hickory, Mayfield, Wingo, Water Valley, Fulton, Paducah Junction, Rives, Moffatt, and Polk, Kentucky; Obion, Trumbull, Newburn, Dyersburg, Fowlkes, Gates, Curve, Ripley, Hennings, Covington, Atcka, Kerrville, Millington, Woodstock, St. Elmo, and Memphis, Tennessee.

Fourth Section—Memphis, Edmonston, Forest City, Palestine, Brinkley, Surrounded Hill, Devall's Bluff, Hazen, Carlisle, Lonohe, Kerrs, Agents, Little Rock, Mabelville, Benton, Malvern, Lawrence, and Hot Springs, Arkansas.

J. Dunbar Wright's Lecture

WHETHER or not the semi-monthly Tuesday evening lectures in the club rooms of the Automobile Club of America are increasing in popularity, the fact is that the attendance is increasing and the climax seems to have been reached on the last occasion, held Tuesday, January 15, when J. Dunbar Wright gave an informal talk concerning his tours for 1901 both abroad and in America.

Mr. Wright enhanced the value of his words by displaying stereopticon views of maps, roads, towns, and miscellaneous scenes along his journey through France, Germany, and Switzerland. He went through each town in his descriptions, making many of his listeners feel as though they had almost been with him, he comprehensively describing topographical characteristics of the scenery, manners and habits of the people, idiosyncrasies of the weather, and lastly but not least, by any means, he gave an idea of the imperturbable philosophy displayed by his companion and host, Albert R. Shattuck.

Mr. Wright is now on the briny deep on his way to Spain, where he intends to do some automobile touring. A new French car awaits him there. He will return to this country during the late Summer.

Affiliation Still Under Debate

THE subject of affiliation or the getting together of American automobile clubs for the purpose of governing the sport is still in the same unsettled condition that characterized it last month. The arrayed interests are the Automobile Club of America in favor of the proposed plan as outlined in the January number of the AUTOMOBILE MAGAZINE, and a number of clubs on the other side, this element feeling that the individuality or independence of the clubs will be lost if the A. C. of A. plan is accepted. Some clubs have already accepted the plan, some are holding off and some have openly refused to join. One of the latter is the Chicago Automobile Club, which in answer to the proposition of the A. C. of A. to affiliate sent the following reply December 17.

A. R. SHATTUCK, President Automobile Club of America :

Dear Sir—Chicago Automobile Club has, with much interest and in a spirit befitting the import of your proposal, given careful consideration to your esteemed favor, inviting affiliation with the Automobile Club of America. Chicago Club is heartily in accord with the project of forming a governing body to promote the objects you have in contemplation. We beg to lay before you, however, modifications suggested by our membership, and indulge the hope of having your consideration to the end that your efforts may lead to the organization of a representative governing body of national scope.

We feel that the Automobile Club of America is entitled to the recognition of the fraternity for its successful work, intelligently and unselfishly performed in the advancement of the sport and club interests, and, with full cognizance of the position your club now occupies as the leading organization of its character, we desire to subscribe to and support its project as fully as may be possible.

Chicago Club, and, we may add, Western clubs generally, while heretofore less active than yours, are none the less destined to become important factors in the development of the automobile, the sport, the trade, improvement of our highways and proper conservation of legislative action. In Ohio there are a number of clubs of such prominence and activity that they have organized a State federation whose work is directly in line with that proposed by your plan of affiliation. There are many clubs round about us, so that, considering the youth of the art the West has made substantial progress and bids fair to become as

important in all that appertains to motor vehicles as it has had the good fortune to attain in many other industries and sports.

It has been the observation of members of the Chicago Club in touch with amateur sports, that attempts to govern the entire country by a single Eastern organization have not been successful. This is not due to discrimination on the part of Eastern men against their fellows in the West, but to lack of appreciation of widely varying local conditions. We call your attention to these facts that you may appreciate our position and understand that the one object for which we contend is the institution of a representative governing body.

Having then given careful thought to the procedure proposed by your club, to the growing influence of the Eastern clubs and to the conditions existing in the West, we are disposed to regard with favor the formation of a national association on interdependent lines wherein all clubs may have such representation as may be warranted by their standing and in which all owners of automobiles, of acceptable repute, may become members at a nominal expense. The purposes of such organization would naturally be those contemplated by your plan of affiliation. The association should elect officers at an annual meeting and there should be committees to take charge of the various branches of the work; these bodies should, in our judgment, be national in scope and representative of all sections of the country.

The racing rules of the A. C. of A., while doubtless as full and as comprehensive as was possible at the time of their adoption are not, in our respectful judgment, all that may be desired. We find on careful analysis that they are not in harmony in some respects. We believe that the regulations you propose should be tentative and subject to emendation by an organization such as we suggest.

We are, as you probably know, promoting an exhibition to be held at the Coliseum Building in this city, during the first week in March. We suggest that a meeting be appointed for that time, by the A. C. of A., in which representation from all the clubs of the United States and unattached owners be invited. It would be practicable, seemingly, by a conference between representatives of our respective clubs, with such others as will lend co-operation, to arrange for a convention of this character.

Should you favorably consider this recommendation, Chicago Club will appreciate and avail of the opportunity to extend its best hospitality to attending delegates.

Yours most respectfully,

F. C. DONALD,
President Chicago Automobile Club.

The annual meeting of the Chicago Automobile Club was held January 9, and no answer having been received from the A. C. of A. to the letter of December 17, the latter feels that the communication may be considered a public one.

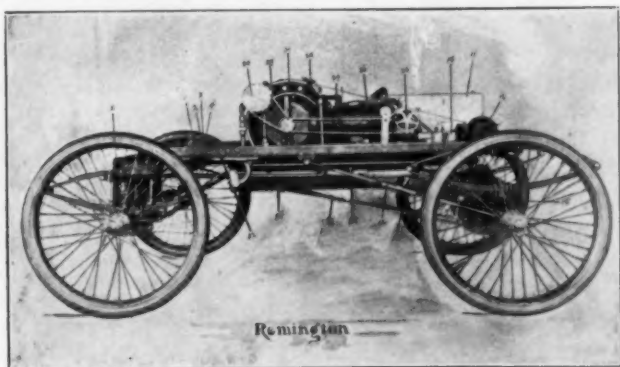
For the good of not only the sport, but also the industry of automobiling it is hoped that the various interests will stop getting further apart and arrive at a satisfactory conclusion, whereby all will be satisfied and join in a general movement to encourage the use of the automobile. The possibilities of getting pleasure and profit out of the self-propelling vehicle are too great for clubs to lay aside the main idea that "encouraging its use" should be paramount in the minds of those associated with the subject.

Suppose two governing bodies are in existence three months hence, the A. C. of A. one of them and some new association the other. Each to support its own prestige will be forced to ignore the authority of the other. Each will disqualify those who compete in the events given under the other's auspices. There is no knowing how far this matter would go. Take for instance the several events planned for next Spring by the A. C. of A. and the L. I. A. C. If the latter is not affiliated with the former, and holds an endurance contest, no one wishing to enter the former's events would dare take part in the L. I. A. C. fixture. A showing of strength in this regard will consist of banding together the greatest number of individual contestants with the greatest number of manufacturers, dealers, etc., to array against the other side. Whichever governing body controls the greatest number of manufacturers, dealers, or contestants, will be in a strongly fortified position, for it not only will have plenty of individual support but will have the machines. Those allied with it will feel that they lose nothing by being debarred from the events of the other side.

Many had not thought of this side of the question, the gravity of the threatened situation not being fully understood. War between two rival automobile legislative bodies means an arraying of interests against each other, the result eventually brought about being either amalgamation of the two or the death of one. It rests with those who have the power, to fight or join in a movement which will satisfy all interested in the general subject of automobiling.

Remington Standard Automobile, Style "C"

THE body is of the piano box type with length of body 72"; width of body 36"; width of seat 42"; the gasoline tank will hold 7 gallons and is located back of the seat cushion. The body back of the seat is covered by a substantial leather boot. The motor and all mechanism are placed on and securely attached to an angle-iron frame upon which the body is bolted, and with such construction it is but a simple matter to remove the entire body in case of repairs or adjustment. This is done without disturbing any of the mechanical parts even to the wiring. The angle-iron frame rests on



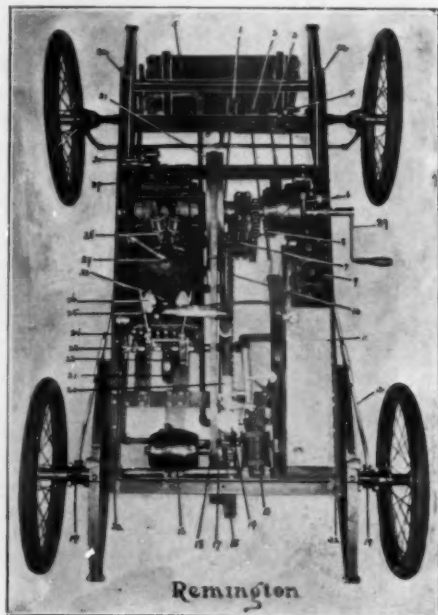
Side Elevation

two three-quarter elliptic springs in the front and two full elliptic springs in the rear. The front axle is of solid forged construction with ball-bearing knuckle joints for steering. The rear axle is $1\frac{1}{8}$ " in diameter and runs in four sets of roller bearings, self-lubricating, with ball-bearing thrust bearings. The differential or compensating gear is enclosed in a gear case and attached to the rear axle.

The wheels are of Weston-Mott make, described as their No. $1\frac{1}{2}$, having extra heavy hubs and extra heavy spokes. They are 28" in diameter with $2\frac{1}{2}$ " or 3" pneumatic tires as ordered. The steering is with the side lever and the operation of the various speeds of the

vehicle is controlled by foot levers which is a Remington patent and which device takes all of the ordinary levers out of the hands of the operator. The planetary transmission gear is used, giving two positive speeds forward and one reverse. Variations in the speed of the vehicle may be easily secured by a unique regulation of the speed of the motor, which has range of from 300 to 1,000 revolutions per minute. The speed-changing device to the motor, together with air and throttle controlling of gasoline, as well as the battery switch, are all conveniently placed, which makes the Remington carriage one of but a few which can be easily operated by anyone after a few trials.

The motor is of two-cylinder four-cycle type, with the head and cylinder cast in one piece.



Plan View

The transmission gear is on the same shaft with the engine.

The sparking device is of make-and-break principle with platinum points; is positive in its operations, simple in adjustment, and not easily thrown out of order. Large size Columbia Dry Cells are used in starting, after which a very complete specially constructed Dayton dynamo is used. The water tank is located in the body and the radiating coils are placed in the front of the carriage and above the front axle. The water circulation is successfully accomplished by means of a small geared pump operated by the motor. The motor valves, both inlet and outlet, are each in a cage by themselves, so that it is possible to remove any one of the four valves without disturbing the other three.

KEY TO DETAILED ILLUSTRATION

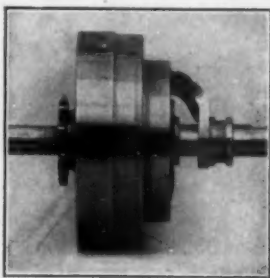
1, Brake lever ; 2, slow speed lever ; 3, reverse lever ; 4, high speed lever ; 5, radiator ; 6, transmission gear ; 7, counter-shaft ; 8, counter-shaft chain ; 9, batteries ; 10, main driving chain ; 11, water tank ; 12, radius bar ; 13, spark coil ; 14, carbureter ; 14, compensating gear ; 16, dynamo ; 17, dynamo governor pulley ; 18, dynamo belt ; 19, roller bearing pockets ; 20, wire gauze safety connection ; 21, exhaust pipe to muffler ; 22, sparking lever ; 23, valve to igniter cam shaft with sprocket ; 24, valves ; 25, intake connection ; 26, igniter plug ; 27, water connection ; 28, sight feed oilers ; 29, cam shaft pump chain ; 30, pump ; 31, main fly-wheel ; 32, angle-iron frame.

CHAMPION SPEED CHANGING CLUTCH

THIS is a very compact clutch for use in connection with gasoline driven automobiles, and which the makers offer as a thoroughly "tried and proven" device. It is attached directly to the motor shaft and at high speed no gears are running. This does away with the noise due to this cause, which is sometimes very annoying.

There are two speeds for both ahead and reverse, the slow speed being designed to give 6 miles per hour, and the reverse is at the same rate. As will be seen the entire gear is inclosed in a dust proof case measuring $9\frac{1}{4}$ inches in diameter by $7\frac{1}{4}$ inches long. All gears are cut from the solid, are always in mesh, and run in oil.

It is made by the Champion Manufacturing Company, 479 Hancock Street, Brooklyn, N. Y.



Champion Speed Changing Clutch

The Searchmont Motor Company of 1231 Orkney Street, Philadelphia, are steadily turning out touring cars. These are well illustrated in their new catalog which is well worth sending for.

An Engine Maker's Catalog

THE Mason Regulator Company, Boston, Mass., have issued one of the neatest little catalogues we have seen, describing their automobile engine. This is illustrated in the best manner, both as a whole and in parts, each part being shown, numbered, named, described, and priced.

Among other things it says: "Your automobile can be no better than its engine. It is good or bad, according to the character of the engine, for the engine is the pivot wheel of the whole machine.

"It's hard to describe a 'Mason' engine on paper; it isn't a paper orator. It's in actual everyday work, over all kinds of roads—hilly, level, rough, smooth, mountain, seashore, or city—that it pleads its case most eloquently.

"Now about the price. This is a delicate subject, for an engine is cheap or dear, not according to the price paid for it, but according to the quantity and quality of the service which it renders in return for the price paid." This and other like information for the "Autoite" as they call him, make it an extremely interesting catalog.

The American Rubber Works Company, makers of the whale-bone tire (which seems to have some features that automobilists have long been seeking) have leased the factory of the New Brunswick Rubber Company and are thinking of buying it in order to locate there permanently.

Mr. R. B. Bramwell, so well known in connection with the De Dion Company, has associated himself with the International Motor Car Company as advertising manager at Toledo, O.; vice Mr. Stuart resigned. His many friends will be pleased to note his new connection and wish him every success therein.

The latest topic of discussion in France relates to the sex of the word automobile—shall we say *he* or *she*? The majority of votes are cast in favor of the masculine, and it certainly seems more apropos to designate a powerful machine in this manner; women are seldom mechanical by nature.

